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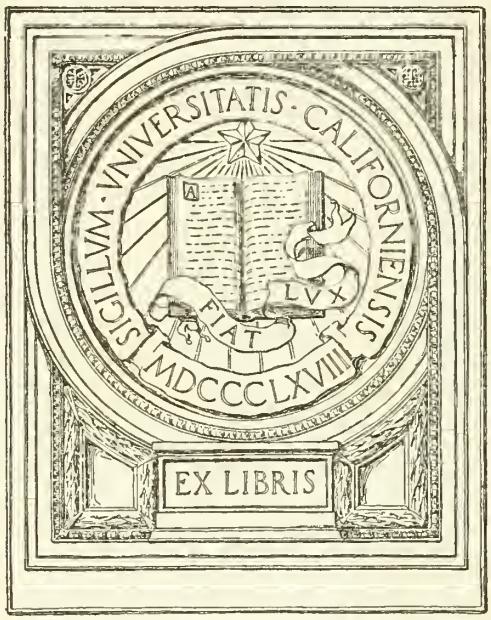

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ORIGINAL ARTICLES

THE TREATMENT OF PEPTIC ULCER BY GASTRO-ENTEROSTOMY.*

C. H. Mayo, M. D.,
Rochester, Minnesota.

In the study of digestion as a necessary function in the maintenance of life, one comes very close to the fundamental question of life itself. The assimilation of the essential elements by plant life, singly or in combination, or in animal life by the process of the single cell, or the action of an organ, is all equally interesting and almost equally marvelous. The various activities of the cell are solved apparently only here and there, and while many of our leaders in research have undertaken the study of the special problems with a preconceived notion of the subject and its solution, their work is frequently biased and they often bridge serious difficulties by theory.

Many of the great discoveries of medical science have been developed by our army medical officers; the work was often started as a bit of scientific research to make a change in the monotonous routine in army posts. William Beaumont started the first practical investigation of human digestion and published his observations in book form in 1833. They were based on an injury to the stomach through the diaphragm of a French Canadian, Alexis St. Martin, from which injury a high, permanent gastric fistula was formed. It is of interest that much of this work was done at Mackinac, Michigan, at Plattsburg, New York, at Prairie du Chien, Wisconsin, and last, at Washington. Beaumont's work has been the introduction to, as well as the basis for, nearly all investigations in regard to gastric digestion. Among the many students of this subject, Pavlov of Russia, who based his studies on experimental fistulas developed in animals, has been one of the most prominent. Cannon of Boston has also won recognition by work on the mechanics of the stomach and the intestines.

The mechanics of the stomach by means of which the digestive fluids are produced is very delicately developed for the work to be accomplished. In this respect it is much more efficient than if it were under voluntary control, although it may quite often be stimulated and upset in its function by psychic action. By working on the theory of cell activity and its control by types of food, Sippy and his followers, taking advantage of the action of fats in delaying digestion and reducing the acidity with the additional administration of alkalies, have developed a very good system of control of the acids by variation in diet and by frequency of administration of food. Unquestionably, much may be accomplished along this line. I would take issue, however, with the statement that gross gastric ulcers are comparatively frequent or that they are readily healed. Such ulcers are rarely multiple and the heavy induration backing the ulcer prevents healing by preventing approximation of the mucosa. Ulcers of the stomach must be destroyed by perforation, by cautery or excision to accomplish such approximation. I do not believe that true ulcers exist without evidence on the surface or in the tissue, although surface ulcers, as described by Beaumont, aphthous in type, do occur in the stomach mucosa as well as in the mouth, and heal without leaving a scar.

Gastric and duodenal ulcers are probably the result of local thrombi from an infection by a certain group of streptococci which grow in an

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acid field. Such ulcers are found four times as often in men as in women of every walk of life, in every country, and under every condition except that of non-acid stomach. They are not caused in man by traumatism of the mucosa through bones or foreign bodies such as fowls naturally take as aids to digestion. About 80 per cent of gastric and duodenal ulcers appear in the first portion of the duodenum in which each bolus of acid chyme remains until neutralized. Occasionally the bacteria are undoubtedly carried in the blood stream from a local focus and at times bacteria enter the chyle duct from the intestine but do not attack the mucous membrane except as infarcts in its capillary circulation, in the rear, so to speak, and the area involved is at once attacked by the pepsin in an acid medium. Rosenow, in his research work, produced gastric ulcers in a very large percentage of instances by injecting into the blood stream of animals bacteria derived from gastric ulcers.

The patient who is suffering from gastric ulcer describes attacks of stomach trouble of a few weeks duration, which alternate with periods of a few to many months of good health; the attacks, however, become more frequent or continuous as the condition becomes chronic. The patient speaks of pain, of burning on an empty stomach three to four hours after eating, of sour, burning eructations in the night; of food ease, and later, soda ease, because of the dilution or neutralization of the acid. The passage of food over the ulcer is always a relief. The acid and pepsin covered ulcer in the food-empty stomach or duodenum is the cause of pain, as the stomach when empty of food often contains a quantity of gastric secretion induced by pyloric spasm. It is evident that duodenal alkalies do not respond to gastric acids as do the pancreas and liver.

Occult blood is of but little aid in making the diagnosis of gastric ulcer. True hemorrhage occurs in 25 per cent of cases. Close questioning of the patient concerning the appearance of bloody or dark stools may give a much higher percentage than this. The x-ray gives very conclusive evidence in about 95 per cent of cases; failures in diagnosis are usually due to reflexes from the gallbladder or appendix to the stomach.

Sippy has done much to establish a basis of medical treatment of ulcer. He has shown that pepsin must have free acid above five points (the higher the better) in which to work. His principle of treatment in an attack is, therefore, to reduce the acid content by dilution of food or by neutralization with alkalies every hour during the greater part of the day. Milk and fats dilute the acid and delay digestion, with a gradual reduction of acidity.

It is just as much a fallacy to say that a peptic ulcer is always cured or healed after an attack is over, as to consider an ulcer of the leg healed after painful extensions have become quiescent. The higher the free acid the more active the pepsin; combined acids (as in cancer) activate pepsin but slowly; the pain in the latter cases is therefore due to peristalsis. Whatever the degree of acidity, neutralization must occur in the area of Brunner's glands in the upper portion of the duodenum. The circular muscle of the duodenum about the region of the common duct holds each acid bolus in the first two and one-half inches of the duodenum until the mass, regardless of the number of ineffectual persistaltic waves in the pyloric portion of the stomach, is neutralized by duodenal secretion to prepare for the alkaline digestion. When the mass is neutralized and alkali touches the pyloric ring, the next bolus will be delivered to pass through the same process. The neutralized chyme passes on to be acted upon by the pancreatic juices and the bile fluids, the latter aiding in emulsifying fats. Only within this neutralizing field of the duodenum can an ulcer occur. The duodenal secretion is stimulated less by gastric juice than by food. Eating stimulates the essential digestive preparation which is alkaline; the acid is convenient and essential for the preparation of certain foods but is not essential to life. The acid activates the secretin in the mucous membrane of the upper intestine, although secretin appears as an activating agent without acid, and thus stimulates the pancreas to secretion. We often see patients who complain but little while under observation, yet who show a non-acid stomach for months and years. Some few persons, supposed to possess non-acid stomachs have a thirty minute period of acidity within the hour after eating. Those

with non-acid stomachs have a relaxed pyloric sphincter, which may be seen when of necessity the bile is delivered by operation into the stomach. Persons with hyperchlorhydria do not have spells of trouble; their trouble is continuous and is caused by a spasm of the pyloric sphincter with a retention of many cubic centimeters of acid and gastric juice, and occurs on a food-empty stomach. They are relieved by taking soda or food; even a few peanuts or kernels of popcorn is a mucous stimulant and develops the duodenal secretion, without which the alkali will not bring about the relaxation of the pyloric muscle and the relief sought. A lack of balance between the gastric acids and the duodenal alkalies of digestion is probably the cause of gastric ulcers, as a biochemic factor allergic to a group of acid-growing streptococci.

Paterson has shown that the acids in the stomach are lowered about thirty points after gastro-enterostomy. After the stomach has been emptied of food, the duodenal secretion ceases and the pyloric spasm ensues, some bile and the alkaline intestinal secretion are then found mixed with and diluting the acid secretion remaining in the stomach. After gastro-enterostomy for duodenal ulcer, the greater part of the food will pass through the new opening for some weeks; later, after healing is complete through the natural peristaltic efforts of the stomach, the new outlet divides its work with the pylorus. Healing follows upon the lowering of the acid mediums and a chemical change occurs in the natural environment of the bacteria which enables natural immunity agents to deal with them and their results. The patient makes use of his own drug store for neutralization, so to speak, and the effects of the spasm of the pylorus are overcome by the new opening. An ideal gastro-enterostomy would make possible a trap-door which would close when food was taken and open after all food had left the stomach and duodenal secretion had ceased; this would permit gastric secretions to pass through as well as to be diluted through its opening; thus the effects of spasm of the pylorus would be overcome until food is again taken and duodenal secretion again occurs.

Rarely after gastro-enterostomy a new crop of bacteria, or a change in the type of the old, infects the new opening, and as a result gastro-jejunal ulcer appears. Silk suture material may, in some instances, be a cause of the induration and irritation seen about the ulcer area; in 80 per cent of such cases seen by us, the silk suture in the field was exposed to the gastric juice from one to four years after operation.

Perforation of a gastric or a duodenal ulcer occasionally occurs, but death does not usually follow, because protective adhesions develop to prevent general infection.

Thirty-eight per cent of all cancers found in man are in the stomach. They are less frequent in women than in men. Because malignant growth occurs in acid fields, the destruction of gastric ulcers should be undertaken as a prophylactic measure. Since ulcers of the duodenum occurring in a naturally alkaline field rarely develop into cancer, extensive operation is not necessary as a preventive.

In peptic ulcer of the stomach and duodenum gastro-enterostomy becomes a mechanical agent in the overcoming of biochemic conditions. The modern treatment of peptic ulcer of the stomach and duodenum by gastro-enterostomy is so satisfactory a relief that a discussion of its development may be an aid in establishing measures of diagnosis as well as of treatment.

The early surgical treatment of ulcer by suture anastomosis, was employed only in operations of necessity, in acute perforation, in obstruction, chronic and increasing, and in cases of severe (continuous or recurring) hemorrhage.

Various mechanical devices have been invented partly as an aid, and partly to share with the operator the credit for the results which were frequently good but often bad. Nicholas Senn advanced Connell's bone plate; next the late J. B. Murphy, the world's greatest surgical teacher, produced his mechanical device, the button. To the Murphy button should be credited a large share in the development of intestinal surgery. The Mcgraw elastic ligature enjoyed a brief period of experimental use. Later came the Mayo-Robson bone bobbin which served as an absorbable framework over which anastamosis of a definite size could

be made, but these were not extensively employed. The suture method has gradually developed and it is displacing all other methods. The button is still occasionally employed in special conditions.

First silk, then silkworm gut, Pagensteeher linen, plain linen and, later again, silk, followed last by chromic catgut, have displaced one another as popular suture materials.

The first operations were anterior gastro-enterostomies by the long loop of jejunum drawn over the front of the transverse colon and attached to the anterior wall of the stomach with the bowel turned for iso-peristalsis. If there was marked obstruction, the operation gave great relief. Later came the posterior attachment; by this method the stomach was united to the bowel through a small rent made within the loop of the middle colic artery in the mesentery of the transverse colon. Then commenced the problems of gastro-enterostomy, for, as knowledge of the symptoms of ulcer and improvement in the technic of its treatment increased, the operation was no longer one of necessity only; it became one of expediency.

The fact that the stomach is an organ largely affected by reflex disturbances from the eyes, the mind, the pelvis, the appendix, the gall-bladder and the nervous system, was often overlooked, and operations for ulcer, as based on symptoms, were common. The long posterior or nine inch loop often developed vicious circles; to avoid these, the loop was united proximal to the gastro-enterostomy by suture or button, the Y or Roux operation was devised, the pylorus was excised and its ends closed, or it was obstructed. It was believed that if food left the stomach in a new way the gastric ulcer was relieved even when the pylorus was normal and without obstruction. The operation was changed by a few surgeons to plastic methods of enlarging the pylorus; the Heinecke-Mikulicz operation, the Finney operation and various plastic gastro-duodenostomy methods were devised which overcame obstruction due to spasm of the pylorus without changing the acidity. At this time the short loop and, later, the no-loop methods were devised. Most surgeons became aware that gastro-enterostomy was an added burden to the patient with gastric reflex disturbance, and insisted on seeing the ulcer before operating on the stomach; or, if the ulcer could not be seen, rather than make an unnecessary gastro-enterostomy, they investigated abdominal sources of gastric reflex for relief. The twist in the bowel for iso-peristalsis, as made in the long loop anterior operation, had been preserved in the posterior methods, and while it made no difference in the original method, the splenic loop, continuing the bowel to the left after crossing the spine, was twisted back upon itself, and in a truly short loop tended to obstruction in a certain percentage of cases. This led to more methods of blocking the pylorus by suture, by folding ligatures, round ligament, fat, fascia, and excisions, which were intended to force the stomach to utilize the new outlet. All of these measures were unnecessary from every standpoint, unless an ulcer on the gastric side of the pylorus, as a tumor which potentially might develop cancer, should be removed. It was soon learned that gravity played no part in the emptying of the stomach, that it would remain dilated unless it was relieved by its own peristaltic efforts, and that these efforts could not overcome obstructive conditions in the intestine. If the latter were present the stomach would dilate and give trouble until the obstruction was relieved. Two other conditions would also cause it to dilate, first, injury of the innervation from wide excisions of ulcers on the lesser curvature; and second, interference with the mesenteric circulation, which often could be relieved merely by turning the patient on the left side or upon the face. The dilatation from paresis required lavage of the stomach, often over a period of from two to five weeks, until innervation was restored. As excision is now made by the Balfour cautery method, which destroys only the ulcer, paresis seldom occurs.

The best type of gastric cases for surgery is that in which every method of medical treatment has failed, or the patients have become tired of the rigid diet and care which is necessary to relieve or to prevent relapse. Such patients greatly appreciate the relief obtained through gastro-enterostomy, and the ability to return to work with the diet that can be obtained by them in their station and environment.

PERSONAL EXPERIENCES CONCERNING THE OPERATION FOR SENILE CATARACT.

FRANK ALLPORT, M. D.,
Chicago, Ill.

This paper is not intended to present any new facts concerning operations for senile cataract. I desire merely to outline my own personal views on the subject; to tell what methods I like best and what procedures have given the most satisfactory average results in my hands. I do this because the profession is somewhat at variance as to the best methods of operating, and the long experience of any man of average ability, experience and surgical skill must be of more or less value in its influence. It is only by the frank and honest exchange of personal views and the surrendering of desired and brilliant, but perhaps impracticable, technique, that we will ever find our feet resting on solid ground and the cataract operation placed in a secured position, from whence it cannot be disturbed except by strong and indisputable evidence.

The object of this paper is to narrate in a simple manner my own method of operating; not that I consider it better than other methods, but it is merely the routine that I have found most satisfactory to me. Other operators have other methods that very likely are better than mine, methods that seem to suit their particular needs, and it would be a mistake for them to change unless they sincerely desire to do so. Neither shall I attempt to go into details concerning all the steps of the operation, as this would obviously be almost intrusive, as there are, of course, some things that everybody does—no matter what may be their practice in other respects.

In the first place, I never operate upon more than one eye at a time.

Patients should be twenty-fours in the hospital before a cataract operation is performed. By so doing they become accustomed to their surroundings, are more quiet, and will act better on the operating table. The bowels can be gently moved and a careful diet prescribed so that indigestion will not be troublesome after the operation. Besides this, the eye can be carefully prepared for the ordeal by being irrigated three times a day with a 1/10,000 bichlorid solution, followed by the use of White's bichlorid ointment. An hour or so before the operation the pupil should be dilated with atropin and the lashes should be gently but firmly scrubbed with 1/10,000 bichlorid solution and gauze, to get them as clean as possible. The entire face—eyes, brows, etc.,—should be well cleaned, and after the patient is on the operating table the face should be again washed, the eye irrigated and the lashes and eyebrows gently scrubbed.

It is better to operate on the bed where the person is to lie or perhaps in the same room or ward or, at least, to have the patient moved as little as possible after the operation. If the patient is moved from an operation room to a private room or ward, the moving should be done as quietly as possible and superintended by a reliable and conscientious person. The patient should not help himself at all.

I always wear thin, tight-fitting, rough-surfaced gloves. The operation is much safer and I can handle delicate instruments perfectly well with them on.

Good illumination of the field of operation is essential to the best operating. I prefer a hand electric light with condenser, and a glazed globe. Besides this—a trained assistant focuses accurately a large convex lens on the eye, between the hand, light and the eye.

My associate, Dr. James Smith, has devised what I consider to be the best light for a cataract operation that I have ever seen.

He has merely taken a Ziegler hand lamp and fastened it to an arm that projects out beyond the light. To this arm is attached a roundish concaved bifurcation, into which can be slipped any strength of convex glass to be found in a trial case. This glass slips in the bifurcation just as a glass is slipped into a trial frame. In this way a stronger or weaker glass can be inserted and a corresponding focus of intense illumination thrown accurately upon the eye.

I like the hand lamp much better than the stationary lamp, as you can put it wherever you want it. This addition to the Ziegler light, devised by my associate, Dr. Smith, produces an ideal illumination for a cataract operation.

These lights will be manufactured by F. A. Hardy & Co., Chicago.

All water used for cleansing and irrigating should be warm. It should not be dropped on the eye from a distance, as this startles the patient and may make him jump, which would be especially unfortunate after the eye has been opened by the incision, as under these circumstances jumping and squeezing of the eye may be very unfortunate.

The speculum should be introduced gently and the patient told what is being done. Be careful not to press on the arms of the speculum.

Teach the attendants and the patient to keep quiet, and reassure the patient by a friendly word once in a while, telling him what is being done in order that he may not be taken by surprise.

When the initial puncture of the incision is made, the handle should be elevated a little so that the knife does not pass between the corneal layers, but directly through them all. When the counter puncture is made in the opposite side of the cornea, the handle should be somewhat depressed, as otherwise the knife is liable to pass too deeply into the eye and into the sclera.

I use a solution of 1 per cent. holocain with 4 per cent. cocain, and I always put a drop in the eye not operated on, as it induces more ocular quietude.

If a conjunctival flap is made, a few drops of adrenalin should be used, as otherwise considerable hemorrhage will occur, which may flow into the anterior chamber and embarrass the operator and lessen the chance of a successful result. A conjunctival flap lessens the chance of infection and hastens healing.

Before the iris is cut, a drop of the holocain and cocain solution may be dropped upon the incision, which will obtund sensibility. The patient should be told that this step in the operation may be a little painful, and he should be cautioned not to jump. Where it is possible, I very much prefer to make a preliminary iridectomy. I am confident that this renders the cataract extraction much safer and surer. There are several reasons for this opinion. In the first place the attack on the eye is divided into two parts: first, the iridectomy, and second, the removal of the lens. It is easier to recover from a thus divided assault than if both are done at the same time. Besides this, if the iridectomy is done separately, there is very little and sometimes no hemorrhage when the lens is removed, which of course greatly facilitates the operation. Another important reason for a preliminary iridectomy is, that a patient, by having once gone through the iridectomy operation, always behaves better when the real cataract operation is performed. I might say at this juncture that I consider the cataract operation with an iridectomy a safer and surer operation than the operation without an iridectomy and for this reason I always make an iridectomy.

The irideetomy should be as small as possible and this can be done by holding the scissors vertically, instad of horizontally.

After the iridectomy, I take out the speculum, as this renders the escape of vitreous much less likely to occur. I then pull up the upper lid with a strabismus hook and rupture the capsule with the cystotome, which should always be very sharp so that the capsule can be easily and aecurately ruptured. The assistant pulls down the lower lid with his finger. In this way the eyelids are freely opened without pressure on the eyeballs. I then press upon the lower portion of the cornea with a spoon, to gently coax the lens from its bed and at the same time gently press upon and depress the posterior lip of the incision with another spoon in order to open the wound and encourage the escape of the lens, which should always be slowly and not suddenly delivered.

For the last few months I have been using the lid elevators of my friend, Dr. W. A. Fisher, of Chicago, instead of a speculum, and wish to say that I regard them as infinitely superior to any speculum that has ever been devised for a cataract operation. An assistant inserts one

elevator under the upper lid and another under the lower lid. The two elevators are then gently but firmly separated and raised, thus opening the palpebral space to its fullest capacity. This provides a wide operative space and at the same time maintains a control over the lids, orbicularis muscle, etc., unobtainable in any other manner. The danger of winking, lid movements, etc., is thus eliminated and the operation, therefore, made just so much safer. The assistant, while spreading the lids apart by the elevators, should at the same time lift the lids from the eye, thus preventing all pressure on the eyeball and very much lessening the liability of escaping vitreous. The freedom from this accident renders the expulsion of the lens much easier and safer. If the anterior chamber is irrigated, it can be done with much greater assurance and safety than by any other method. I leave the elevators in until the end of the operation and then gently remove them.

Great care should be taken that the upper lid and lashes do not pass into the corneal space made by the incision. This might produce infection. In case the lens seems too large for the incision, its forcible exit should not be encouraged, but the incision should be carefully enlarged by small, curved, round-pointed scissors.

After the lens has been delivered and any remaining lens substances gently stroked out (that can safely be delivered), I carefully wash out the anterior chamber with warm, sterile normal salt solution with a specially devised irrigator, which I here exhibit. This consists of a rubber bulb, large enough to fit the hand. The rubber should be of the best quality—soft and pliable—and should not flake so that particles from its interior can be found in the solution. Some years ago I devised this irrigator and had it made with a glass end, about the same shape as a strabismus hook, only flattened in such a direction that the hand enclosing the rubber bulb could be at the side of the patient, instead of above the eye, which is always a constrained position from which to operate a bulb with a bent end. The glass end proved to be difficult to make correctly and uniformly. Besides this, it broke easily and was a source of considerable annoyance. I, therefore, had an end made of gold and since then have had no trouble with the irrigator. It is made by F. A. Hardy & Co. of Chicago, and is sold for $15.00. It is a perfectly satisfactory anterior chamber irrigator. Not much force should be used. Loss of vitreous should be borne in mind and air bubbles should be ejected from the irrigator before it is used. In an unmanageable patient I sometimes am afraid to use the irrigator, as a sudden upward turn of the eye, or a quick motion, might inflict irreparable damage. I prefer to leave some cortical substance and take care of it afterward by a needling or some similar operation, if it proves to be necessary. I take great care, however, to free the incision of all debris. The pillars of the coloboma should be carefully replaced by a spatula with stroking movements outside the cornea, if possible—inside the cornea, if necessary. The bichlorid and atropin ointment of Dr. White, of Virginia, is then placed inside the lids with a probe and a suitable dressing over both eyes is applied. An aluminum shield is also placed over the operated and slightly covered eye. In two or three days only the operated eye is protected.

I give a chloral hydrate and bromide of potassium mixture at bedtime for one or two nights to insure rest.

I have the hands gently tied with a bandage cloth to the foot of the bed for a few nights, and if possible, secure the services of a day nurse and night nurse for nearly a week to constantly watch the patient and administer to his wishes.

I usually secure immobility of the bowels for two or three days by giving a small hypodermic dose of morphin. I then give a mild laxative.

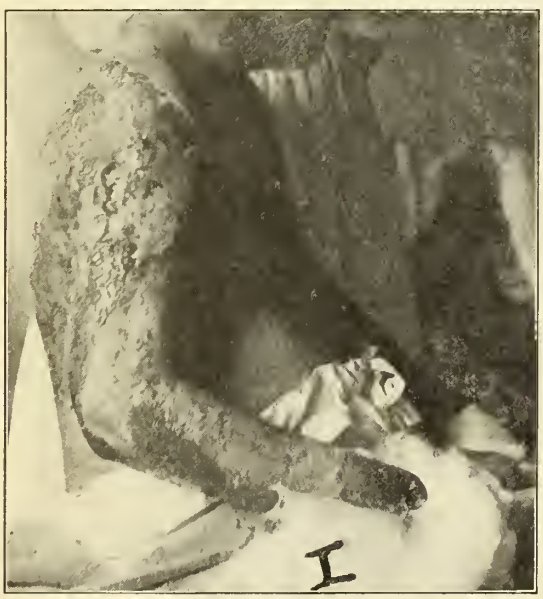
I trust I may be pardoned for dwelling upon these simple details of the management of cataract cases. It may be borne in mind, however, that such operations are essentially a chain of small, fussy details, and the operator who most carefully observes details will, other things being equal, obtain the best results. I also request that these fragmentary notes shall not be regarded as a description of the cataract operation. They are merely intended to convey to your minds some of the details that I have found useful in my operative work.

PARAFFIN TREATMENT OF BURNS.*

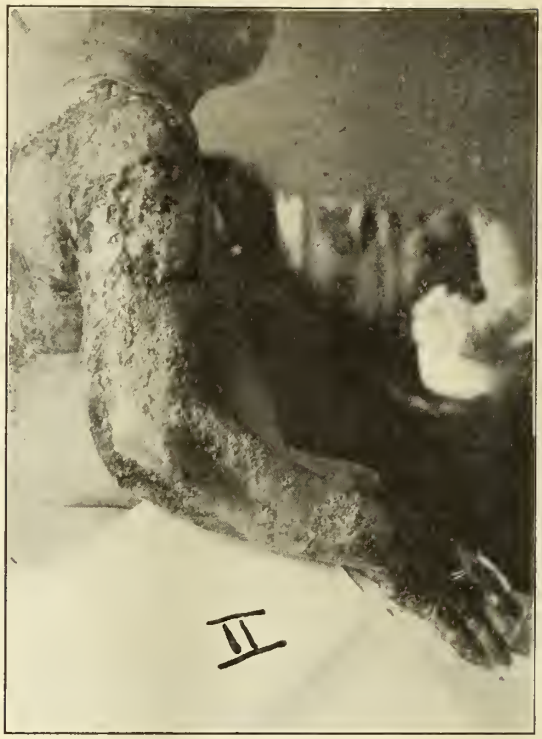
ARTHUR N. COLLINS, M. D., F. A. C. S.,
Duluth, Minn.

Finished discoveries rarely emanate from one mind. The collaboration of several investigators is commonly necessary to the discovery for its elaboration and before it is made usable for the many. One may mention that our present day familiarity with bacteriology is founded upon the discovery by Latour in 1836 of the living character of micro-organisms. Twenty years later Pasteur showed that putrefaction is produced by "living ferments," and Lister, acting on these advances made by his predecessors, applied to wounds certain agents to kill these contaminating micro-organisms. In this way the principle of antiseptics was evolved.

Undoubtedly burns have occurred since the discovery of fire. The role of treatment of burns has engrossed physicians, and applications of many kinds have been used by them down through many generations. One has merely to consult his texts in order to find described numerous methods, drugs, ointments or applications for the soothing and healing of burns; and still dissatisfaction reigns. The most recent advance, one which has attracted greater attention since the advent of the present Great World War in Europe is the principle of covering burned surfaces by a paraffin coating to exclude the air. This was done first, so far as known, by a French physician some sixteen years ago. After considerable experimentation he devised a preparation known as "Ambrine" (the excellence of which seems to be marred chiefly by the fact that the originator chooses to keep his formula secret). The main constituent of this preparation is said to be 96 per cent paraffin.



I. To show even smoothness in removal of the paraffin crust. Shows also the wrist dark and jelly-like on the surface where it is denuded of skin contrasted with the white paraffin and cotton dressing.



II. The hand after sloughing skin was removed. Note the numerous islands of skin appearing all along the arm. First, second, and third degree burns

Acting on the suggestion that the paraffin coating on the burned surface contained the essential element of value in the healing of the burn, many clinicians have proceeded to use it as such. Beiter found that in attempting to use resin in the paraffin, the resin would sink to the bottom of the melted paraffin, and when applying it with a brush the resin caused pain. He therefore recommends the paraffin alone, or occasionally tints the paraffin pink for cosmetic reasons.

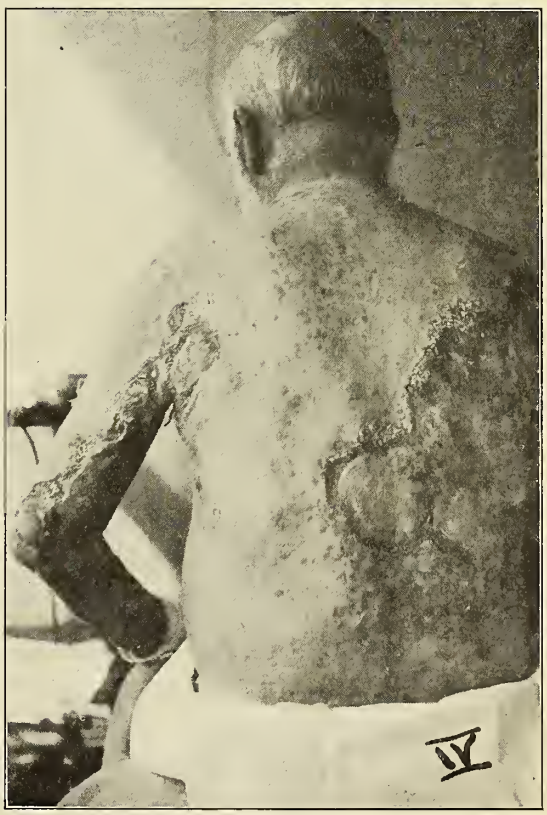
In the cases which will be shown here, plain paraffin has been used with a dilution of two

*Presented before the Annual Meeting of the Minnesota State Medical Association, Duluth, August 28-30, 1918.

III. Burned area on the back. Note patches of sloughing skin; also dark spots around the lower edge representing pustules present on admission.

per cent paraffin oil. As pointed out by Beiter, it is inexpensive, clean, comfortable—especially so at dressing time—fewer furuncles occur when it is used, and superficial burns heal with astonishing rapidity. The deeper burns heal slowly under any method so far known. They frequently require skin grafting. The scar tissue in first and second degree burns is soft and flexible treated by this method. The removal of gauze dressings is a painful procedure and is always dreaded by the patient. The removal of the paraffin crust is practically painless. With the removal of the gauze mesh many minute skin granulations are torn from their bed and the healing process therefore receives a setback. When the paraffin crust is applied there is a smooth, flat, moist and moisture-proof surface which presses gently upon the new forming island of skin and encourages its peripheral spreading and junction with neighboring islands of skin. Very soon after the application of the paraffin coating to the thoroughly dried surface there interposes between the paraffin crust and the burned surface a secretion of lymph. This is held to the burned surface by the paraffin crust and furnishes a normal moist medium for the encouragement to growth of the islands of skin. It is this lymph lake which is responsible for the painlessness when the paraffin crust is removed. The crust does not adhere to the surface and the nerve endings are not molested.

The writer in dressing his burn cases has made use of all the useful suggestions he could assemble in applying the paraffin method and he has found that the burns heal kindly and rapidly. In applying the dressing to a fresh burn for the first time, no attempt at cleansing the surface is made beyond spraying lightly with a 3 to 5 per cent solution of dichloramine-T. over which the paraffin is painted. Blisters are punctured but not removed, at the first dressing. A child with an extensive burn of the chest and abdomen, writhing and screaming with pain on admission, ceased crying immediately and smiled after thus applying the para-



IV. Showing burned area of back, pustules scattered over the rest of back and burned area of under side left arm and axilla, the latter chiefly third degree burns.

V. Showing process of trimming loose sloughing skin. Shows also numerous islands of skin spreading and coalescing with each other.

ffin crust. At subsequent dressings any loose or sloughing skin is trimmed off with sharp scissors. This may be painful if trimmed too close. The secretions are removed by spreading smooth sheets of sterile gauze over the surface and blotting by gentle pressure. A cotton pad with a twisted pedicle for a handle may be used for this pressure. The surface is then ready for drying. This is done with an electric hair drier or blower, and the drying should be thoroughly done. Where there is infection or sloughing skin with accompanying foul odor, the dried surface is then sprayed with dichloramine-T. In some places this may cause pain, and the writer has found if this is immediately covered with paraffin oil sprayed on, the pain is relieved. For this purpose two atomizers are held in the left hand while the spraying-bulb is operated with the right. One contains the dichloramine-T in an oily solution, and the other contains sterilized paraffin oil. If at any time during the application of the dichloramine-T the patient complains of pain, the paraffin oil may immediately be sprayed on at that point. The surface is then ready for the paraffin crust. Ordinary paraffin with 2 per cent of paraffin oil to increase flexibility is used. The mixture is heated in a double boiler and is brushed on. It may be used in a paraffin atomizer with a water jacket if preferred. It may be cooled down until a few drops on the back of the hand or wrist are not uncomfortably hot. It is daubed on gently at first. Much stroking with the brush over the raw surface seems to cause pain. The raw surfaces are covered thinly at first. If the patient complains of the heat, an assistant may apply the electric blower or drier to cool the freshly-coated surface following the brush. After the burned surface has been coated gently and is hardened, a second coat is freely applied and this coat is extended outward for one or two inches onto the surface of the healthy skin. Before this dries, thin sheets of cotton fibre being ready, are spread over the soft crust and are brushed over with the paraffin which impregnates the fibre with the crust. When this is hardened, absorbent cotton is placed thickly

VI. Drying the surface with electric hair drier or blower. Loose skin flaps are thus disclosed, the current of air having raised them from the surface.

VII. Spraying the surface in places with dichloramine-T after the drying is complete.

over the most dependent edges to absorb secretions which commonly leak out. The dressings over large body-burns may be held in place by a band, swathe, slit nightshirt or other device which may later be cleaned, sterilized and used again, thus contributing to a large saving in bandage material. The dressing is renewed in twenty-four hours.

It has been said by some critics that with the paraffin method an infected wound is covered with a sealed dressing. The writer has found that infection rapidly disappears with the use of the above method. It is also said there is no way of controlling the temperature of the paraffin; that it is too hot at 212 degrees and too cold at 144. The writer has found if the paraffin is applied in conjunction with the blower the pain is reduced to the minimum and is only momentary. Certainly compared with the painful removal of gauze dressings according to the older methods, and considering the rapid proliferation of skin particles, the paraffin method is beyond reproach. The patient frequently reiterates how comfortable the dressing feels.

It is to be hoped that the last word has not been said by investigators along this line of treatment. Sollman suggests that further improvements be attempted by the addition of antiseptics, stimulants and especially anesthetics, to the liquid petrol of the first coat, and that a systematic comparison of these improved methods with the older methods is desirable. The writer believes these suggestions very important and ventures to assume that with such improvements practically incorporated with the present basic foundation, the treatment of burns will have been essentially standardized.

DISCUSSION.

DR. J. C. MASSON, Rochester: I regret that Dr. Charles Mayo is not here to discuss Dr. Collins' excellent paper because he has had an extensive opportunity of seeing a great many patients under treatment in some of the hospitals in the East where this method of tre ting burns is being used a great deal.

I have not had any personal experience in the treatment of cases of burns, but my attention has been drawn to some of them, and the end results impressed me with the value of this form of treatment. I saw one patient, a young girl who was severely burned from her clothes catching fire, who had been treated by this method. Wet dressings were used to clear up the surfaces; the child suffered terribly while being dressed. After the surfaces had become practically sterile, as shown by a bacteriologic count, and the sloughing material was removed, the paraffin dressing was applied, with great relief to all the patients on that floor of the hospital, and with marked comfort to the patient. In this case the paraffin was not used as early as is advised by the men who use it extensively. The child's wounds healed rapidly under it; in one or two places that were slow to heal skin grafts were applied and after the fourth or fifth day when the grafts showed evidence of taking, the paraffin dressing was put on over them. The dressing did not interfere with the growth of the transplants, and the child made a perfect recovery.

Another case was that of a young man who sustained an extensive traumatic injury with great loss of skin and subcutaneous tissue of the forearm. I skin-grafted him, putting on the ordinary paraffin mesh that is so useful in these cases and left it there for three days. I then put on, on top of that, the paraffin. The patient was up and around from the first, and in eight days he was able to put the arm in an ordinary coatsleeve. The graft took and healed within a short time.

I am satisfied that this paraffin method is a great improvement on the ordinary dressing in extensive superficial wounds. It has been used in a few cases from time to time where we have had sloughing

abdominal wounds, and these wounds have healed leaving a granulating area of about one-half or three-quarters of an inch over the length of the wound which then slowly covered with epithelium. Such small areas, when sterile, can be covered with this dressing and the patient may be up and around with very little extra dressing. The immense saving in dressing material is a point worthy of consideration, and the wounds heal more rapidly.

DR. COLLINS (closing): This method has been used quite extensively by some clinicians for the treatment of raw ulcerated surfaces of the leg, and with success, but I have not had any experience with it and therefore have omitted it from the paper.

This method of treatment is one of the most fascinating things I have had to deal with. It is particularly fascinating to watch one of these ulcerated surfaces heal over. There are many features of it that attract one's attention. For instance, areas which appear to be completely denuded of skin, which appear to be complete second or incomplete third degree burns, will occasionally have some isolated spot on the raw surface which presents a darkened area ⅛ to ¼ inch in diameter. At the next dressing instead of having a darkened area it will be pinkish. In the next twenty-four hours, when you do the dressing there is a whitish area in the center. The next time there is perhaps a definite island of skin. It grows and grows and the next thing you know that island of skin is joining with another similar island of skin. It is certainly fascinating to watch. In the edges of the burnt area the islands of skin are more prolific. They appear quicker and they grow faster; they coalesce with one another, and the skin forms more rapidly there. There is no question but that this method preserves these isolated islands of skin, whereas by the older methods many were pulled off and destroyed. In this respect the paraffin method is a more valuable form of treatment than the old.

ONE HUNDRED PER CENT RECOVERIES IN CEREBRO-SPINAL MENINGITIS.

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Thirteen cases only were treated by the methods here outlined, but in view of the high fatality of cerebro-spinal meningitis in Minnesota, this method, used in London, Canada, seems worth describing, since all cases recovered.

Every case was confirmed as due to Weichselbaum's coccus by bacteriological tests of the cerebro-spinal fluid, including microscopic and cultural.

In ten cases, autogenous vaccines were made.

The cases were of both sexes and all ages; some civilians, some soldiers; three in 1916; two in 1917; eight in 1918. The treatment was begun as soon as the cases were recognized; usually early; in some cases late; in one as late as two weeks after onset.

The outstanding features of the treatment followed were:

(a) **Immediate** lumbar puncture: for diagnosis; for relief of pressure; to secure autogenous vaccine.

(b) **Immediate** intra-spinal injection of Flexner's serum, **to the extent of not more than one-third the amount withdrawn.**

(c) **Immediate** injection of stock meningococcus vaccine, subcutaneously.

(d) **Daily repetition** of (a) for relief of pressure; and of (b) for treatment: combined with use of autogenous meningococcus vaccine as soon as prepared and thereafter at intervals of several days, as patient's condition might indicate.

With one hundred per cent recoveries, we did not dare to omit any item of this procedure; but three cases treated similarly by Major George C. Hale of London, Canada, except that the vaccine was wholly omitted, also recovered. We had already suspected that the **repeated** tapping, and **frequent** use of **small** doses of Flexner's serum, were the **important** features. Nevertheless, some cases at least reacted vigorously to the vaccine and improvement seemed to date sharply from such reaction.

This combined method was introduced into London, Ontario, in April 1916 by Dr. Edward Fidlar, then Chief of the Division of Pathology of the Institute of Public Health. After he went overseas as Captain in the R. A. M. C., his work was continued by Dr. F. W. Luney, now Chief of the same Division, to whom I am indebted for the following notes, including a detailed account of three of the cases.

Meningococcus Cerebro-Spinal Meningitis in London, Can., *by*

Dr. F. W. Luney, Chief Div. of Pathology; Inst. of Public Health, London Ont.

Symptoms—symptoms most frequently noted were headache, vomiting, herpes, Kernig's, strabismus, and rigidity of the neck, often not very marked, and never approaching a true opisthotonos

Spinal Puncture—patient was placed lying on the side at the edge of the bed in the knee-chest position. Skin was cleaned with alcohol; needle was inserted in the middle line between two lumbar spines nearest opposite the crest of the ilium.

Withdrawal of fluid—in the very severe cases the patient was tapped twice daily; other cases once in 24 hrs. At each tap sufficient fluid was removed to lower the pressure to such an extent as to get a flow of not more than 4 or 5 drops a minute (30 to 75 c. c.).

Indications that tapping is no longer necessary:

(a) clear fluid
(b) negative cultures of C. S.F.
(c) normal pressure.

Administration of serum—In very severe cases give intravenously (10 to 20 c. c.), intramuscularly (10 c. c.), and intraspinously. Can be given by all three routes at one sitting. The amount given intraspinally depends upon the amount of cerebro-spinal fluid withdrawn. It has been our rule not to give more than one-third of the amount of C. S. F. removed. We believe that the production of a negative intraspinal pressure does much to aid in draining the upper portions of the canal and thus facilitates also secretion of the spinal fluid.

Foot of the bed—We raise the foot of the bed after each intraspinal injection for the period of one hour in the hope that gravity may assist the serum in seeking a higher level.

Vaccine treatment—Autogenous vaccines seem to be of some value in certain cases. As soon as bacteriological diagnosis has been made, stock vaccine up to 500 million per c. c. depending upon circumstances (age, sex, severity of infection, etc.) is given.

Autogenous vaccine is immediately prepared and can be ready for use in 24 hours. We have commenced with a dose of about 100 million per c. c. and have gradually increased the dose at weekly or sometimes biweekly intervals until recovery. Three or four injections are usually all that are necessary. We have had two cases here in the past year (Norman Axford and Leonard Blackwell), who developed rather severe reactions following injections. These reactions consisted of an exacerbation of the symptoms with increased respiration and pulse rate and a condition that closely resembled convulsions. Immediately following these reactions, marked and continued improvement was noticeable.

Indications for re-tapping—

(a) Occurrence of headache; (b) vomiting.

Usually these conditions are found to be due not to a relapse but simply to increased intracranial pressure.

Diet—Any nourishing food as long as it does not excite vomiting.

Other medications—

(a) Simple laxatives
(b) Keep mouth clean
(c) Vaseline for herpes.

PROTOCOLS.

Patient—Leonard Blackwell.
Physician—Dr. Nelson George.

The child, who was 12 years of age, had not been well since the middle of October, complaining of irregular attacks of headache, convulsions, and occasional vomiting spells with some indefinite abdominal pain. He was seen by his physician who made a tentative diagnosis of tuberculous meningitis. As the child's condition gradually became worse he was sent to the hospital, being admitted on Nov. 1, 1918.

Nov. 1, 1917—
Complains of headache and a cold feeling in the abdomen.

Nov. 2, 1917—
Headache more severe, took very little nourishment, and appears very weak.

Nov. 3, 1917—
Pain in head severe and extended to the back of the neck; the child has periods of unconsciousness and at intervals screams, some attacks lasting five minutes; during such attacks the muscles are rigid and the eyes are rolled back. Urination involuntary; leucocytic count—31,800 per c. m. m.

Nov. 4, 1917—
Although the headache does not seem so severe, the child is lying for a large portion of the time in semi-comatose state and is very weak. Dr. Hill was called in consultation and suggested a spinal puncture.
Removed 40 c. c. of turbid C. S. F. under marked pressure. Smears showed a few intracellular diplococci and cultures, a few colonies of Gram negative diplococci.
Gave 10 c. c. of antimeningitis serum.
Raised the foot of the bed for one hour.

Nov. 5, 1917—
Condition appears the same; a herpes labialis has developed; there is a slight palsy of the external rectus of the right eye.
Removed 40 c. c. of C. S. F., turbid and under pressure.
Cultures show a Gram negative diplococcus.
Gave 10 c. c. of antimeningitis serum (anesthetic used) and raised foot of bed.

Nov. 6, 1917—

No improvement in condition, the child is in a state of semiconsciousness, urinates and defecates involuntarily, takes no nourishment and screams at intervals. Squint still present.

Removed 30 c. c. of turbid fluid, under pressure. Cultures negative.

Gave 10 c. c. of antimeningitis serum (anesthetic used) and raised foot of bed.

Gave 100 million of autogenous vaccine.

Nov. 7, 1917—

The patient's condition seems unchanged; there seems to have been no reaction to the vaccine other than an increased pulse rate, and a period of vomiting.

Removed 40 c. c. of slightly turbid fluid under pressure.

Gave 10 c. c. of antimeningitis serum (anesthetic used) and raised foot of bed.

Nov. 8, 1917—

Condition about the same, appears at times to be a little brighter but lapses into periods of unconsciousness. Has still involuntary discharges, has pain in head which, however, is not quite so severe. Had an attack of vomiting without nausea and still has a slight external squint.

Removed 40 c. c. of C. S. F., turbid and under pressure.

Gave 10 c. c. of antimeningitis serum (anesthetic used); raised foot of bed.

Nov. 9, 1917—

The child's general condition appears slightly improved.

Removed 40 c. c. of blood-stained C. S. F. under pressure; cultures negative.

Gave 10 c. c. of antimeningitis serum (anesthetic used); raised foot of bed.

Gave 200 million autogenous vaccine.

Nov. 10, 1917—

The general condition is much improved; he has had periods of sleep, took considerable nourishment, is conscious and appears quite bright. He still has headache, however, and has shown no definite reaction to vaccine.

Removed 40 c. c. of spinal fluid; clearing and under pressure.

Gave 10 c. c. of antimeningitis serum (anesthetic used); and foot of bed raised.

Nov. 11, 1917—

The patient has had considerable headache today and pain in the back of the neck; had two or three attacks of vomiting which were not associated with nausea. Following intraspinal treatment, complained of severe pain in the back and lower extremities.

Removed 40 c. c. of C. S. F.; clearing and under pressure.

Gave 10 c. c. of antimeningitis serum (anesthetic used); raised foot of bed.

Nov. 12, 1917—

The condition seems very good today, complaining only of but slight pain; the palsy is the right eye has disappeared.

Did not remove C. S. F. or administer serum.

Nov. 13, 1917—

Complains of but little pain, seems stronger but has developed a diffuse punctate rash over the whole body which is very itchy.

Removed 10 c. c. of C. S. F.; quite clear, but yellow, no fibrin settles out on standing, (anesthetic used).

Gave no serum.

Nov. 14, 1917—

Condition about the same; rash still persists and is very itchy.

Removed 40 c. c. of clear fluid, slightly yellow; no fibrin settled out.

Gave 8 c. c. of antimeningitis serum (anesthetic used); and foot of bed raised.

Gave 300 million autogenous vaccine.

Nov. 15, 1917—

Following the vaccine injection of the previous day the child developed a marked reaction which for a time was really alarming. In the morning the temperature went up to 102, the pulse which had been averaging 94 leaped up to 104, the pain in the head and back of the neck was quite severe, he had pain across the abdomen, vomiting his breakfast, and early in the afternoon had successive convulsive seizures lasting for 20 minutes. Later in the day the general condition improved; the rash has nearly disappeared. At 10:30 p. m. the above symptoms reappeared and lasted on and off for about an hour. The attending physician gave up all hope.

Removed 40 c. c. of C. S. F. under marked pressure but becoming quite clear.

Gave 8 c. c. of antimeningitis serum (anesthetic).

Nov. 16, 1917—

The rash has disappeared; during the early morning the child had severe convulsions but later in the day although restless, the pulse is of better quality and he obtained some sleep.

Removed 40 c. c. of clear spinal fluid under marked pressure (anesthetic used).

Gave no serum.

Nov. 17, 1917—

Condition seems much better, has slight pain in the back and head but appears quite bright; vomited; discharges still involuntary.

Removed 40 c. c. of clear C. S. F. under pressure.

Nov. 18, 1917—

Condition much improved, no pain, took nourishment well, sleeps well, and has again control of bladder and rectal sphincters.

Nov. 19, 1917—

No complaints, appetite good, etc.

Nov. 20, 21, 22, 1917—

Continually improving.

Nov. 23, 1917—
Smears from nose and throat, negative.

Nov. 24, 1917—
Smears from nose and throat, negative.

Nov. 25, 1917—
Smears from nose and throat, negative.

Dec. 3, 1917—
Discharged.

Subsequent history—
Good.

Summary—
13 spinal punctures.
Total C. S. F. removed, 480 c. c.; average per day, 37.
Total amount of serum given, 106 c. c.
3 vaccine treatments.
No sequellae.

Patient—Norman Axford.
Physician—Dr. Schram.

The boy who was 10 years of age, developed while at school on the afternoon of January 30th. chills which lasted for two hours. He was sent home and his mother put him to bed where he developed further chills, tenderness and stiffness in the back of the neck and headache and a couple of attacks of slight vomiting.

He slept well that night and appeared quite rational but was still sick and vomiting several times. He had developed a herpes labialis. About 12:30 he again vomited and the family thought it wise to call in a physician who left some tablets but made no diagnosis. At 7 p. m. he was quite irrational and did not recognize his father; the parents were alarmed and again called the physician. At this time the temperature was 101.5, pulse 100, and respiration 32. Physical examination showed a positive Kernig's, a left lateral nystagmus, a condition approaching opisthotonos and delirium. The child's condition became worse and the physician asked for a consultation and Dr. Macgregor was called in. The child in his delirium was very excited and it was found necessary to give him hyoscine before an examination could be made. Examination of the eye revealed a neuro-retinitis; a diagnosis of cerebro-spinal meningitis was made and he was sent to the hospital early in the morning of February 1st, with a hopeless prognosis and with the probability that the child could not live more than three days.

Feb. 1, 1918—
On admission was very restless, screaming out continually and delirious; temperature 99° to 100°.
50 c. c. of turbid fluid under pressure was removed.
Gave 16 c. c. antimeningitis serum.

Feb. 2, 1918.
Condition unchanged, has practically slept none during the past 24 hours—temperature 99 to 101°.
Removed 40 c. c. of turbid fluid under pressure.
Gave 10 c. c. of antimeningitis serum.
Gave 500 million meningococcic stock vaccine.

Feb. 3, 1918—
Condition practically unchanged, marked restlessness has resulted in erosions of the knees and elbows which had to be padded. The bed was also padded.
Removed 25 c. c. of turbid fluid.
Gave 10 c. c. of antimeningitis serum.

Feb. 4, 1918—
Patient much quieter, is conscious and takes food very well.
Removed 12 c. c. of fluid (more would not drain), becoming clear.
Gave 5 c. c. of antimeningitis serum.

Feb. 5, 1918—
Has been restless again today.
Removed 10 c. c. of fluid (clearing).
Gave 4 c. c. of antimeningitis serum.
200 million autogenous vaccine.

Feb. 6, 1918—
During the night the pulse and respiration went up to 100 and 26 respectively and he had a series of muscular contractures resembling convulsions (possibly due to vaccine).
Removed 15 c. c. of clear fluid under normal pressure.
Gave 10 c. c. of antimeningitis serum.

Feb. 7, 1918—
Seemed to be in fine condition, lying on his back and appears comfortable. Temperature down to 99.—and did not tap.

Feb. 8, 1918—
Condition appears good.
Removed under slightly increased pressure 17 c. c. of clear fluid containing flakes of fibrin.

Feb. 9, 1918—
Condition good, complains occasionally of slight headache.
No puncture.

Feb. 10, 1918—
Complains of slight headache but otherwise O. K., removed 25 c. c. of clear fluid under pressure.
Gave 6 c. c. of antimeningitis serum.

Feb. 11, 1918—
Complains of severe headache and pain in back of neck.
Removed 50 c. c. of clear fluid under pressure.
Gave 8 c. c. of antimeningitis serum.
Gave 250 million autogenous vaccine.

Feb. 12, 1918.
Still complains of headache and pain in the back of the neck.
Removed 40 c. c. of clear fluid under pressure.
No serum.

Feb. 13, 1918—
Headache clearing up.
Removed 30 c. c. of clear fluid under slight pressure.
Gave 200 million autogenous vaccine.

Feb. 14, 1918—
Condition good, has developed a serum uticaria. Did not puncture.

Feb. 15, 1918—
Condition improving, only occasional slight headache.
No puncture.

Feb. 17, 1918—
Vomited breakfast, complains of headache.
Removed 15 c. c. of clear fluid.
Gave 300,000,000 autogenous vaccine.

Feb. 18, 1918—
From this date on continued to improve and was able to go home on Feb. 28 after having three negative cultures from nose and throat.

Summary—
12 spinal punctures.
Total C. S. F. removed, 329 c. c.; average per tap, 28.
Total amount of serum given, 69 c. c.
4 vaccine treatments.
No sequelae (after 6 months).

Patient, Pvt. J. P. Stewart, W. O. R., No. 3131497.
Physician, Major Smith, A. M. C.

The patient who was 29 years of age had been in the service but two weeks. He said that since the time he was drafted he had suffered with a very severe cold in the head and chest, which however, had begun to get better. On February 8, in the afternoon, he went down town to the soldiers' club, spent the afternoon there and apparently was in good health; on the way back to the W. O. R. quarters, however, at Queens Park, he remarked that he had a sense of numbness in his feet, felt unusually thirsty and had slight headache. The headache, which was temporal in character became rapidly worse; that night he vomited, developed pain in the neck and became unconscious. Capt. Moore, A. M. C. examined the patient and found rigidity of the neck, a definite Kernig's sign, a temperature of 101° but there was no rash, and no palsies of the eye muscles. As a meningitis suspect he was at once transferred to the quarantine lines at Wolseley barracks.

Feb. 9, 1918—
When seen on the morning of this date, the patient was unconscious and passed involuntarily faeces and urine in the bed. Spinal puncture was performed.
Removed 50 c. c. of turbid fluid under marked pressure.
Gave 10 c. c. antimeningitis serum intraspinally.
Gave 10 c. c. antimeningitis serum intravenously.
Smears from the nose and throat, suspicious.
Examination of C. S. F. showed—
cell count—abundance of pus
globulin—increased
bacteriologic—few colonies of Gram negative cocci.

Feb. 10, 1918—The patient's general condition is somewhat better, he has periods of consciousness but complains of considerable pain in the head and neck.
Removed 60 c. c. turbid fluid under pressure.
Gave 20 c. c. of antimeningitis serum intraspinously.
Gave 100 million of stock vaccine.
Smears and cultures of spinal fluid show Gram negative diplococci

Feb. 11, 1918—
The patient's condition is much improved, is quite conscious and complains of nothing but headache and rigidity in the neck. He has had no strabismus. The vaccine produced no reaction.
Removed 16 c. c. of fluid which is under normal pressure and clearing.
Gave 8 c. c. of antimeningitis serum intraspinously.

Feb. 12, 1918—
Patient's condition improving.
Removed 15 c. c. of slightly turbid fluid under normal pressure.
Gave 8 c. c. of antimeningitis serum.

Feb. 13, 1918—
Condition improving, complaining only of slight headache.
Removed 20 c. c. of C. S. F. which is becoming quite clear.
No serum given because of pain (shooting into legs).

Feb. 14, 1918—
Condition good.
Removed 10 c. c. of C. S. F. (low pressure).
Gave 250 million autogenous vaccine.

Feb. 15, 1918—
Removed 30 c. c. of clear C. S. F.

Feb. 17, 1918—
Complained of nothing, has good appetite, etc.
Gave 300 million autogenous vaccine.

Feb. 23, 1918—
Release smears from nose and throat—negative.

Feb. 28, 1918—
Release smears from nose and throat—negative.

Mar. 2, 1918—
Release smears from nose and throat—suspicious.

Mar. 7, 1918—
Release smears from nose and throat.

March—
Discharged.

Subsequent history—
Good.

Summary—
7 spinal punctures.
Total amount C. S. F. removed—200 c. c. average per day—29 c. c.
Total amount of serum given—56 c. c.
3 vaccine treatments.
No sequellae.

THE ELECTROCARDIOGRAPH IN THE DIAGNOSIS OF HEART DISEASES.*

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At present, a diagnosis of "irregular pulse" is as incomplete as one of "heart murmur". It merely opens the way to a knowledge of the nature and origin of the irregularity. The determination of these facts is even more important in prognosis and treatment than the localization of a valve murmur.

While it is not practicable at the present time to reduce each patient's pulse to a permanent black-and-white record, the doctor should become familiar enough with the physiological events represented by these records to visualize them to himself when he examines the patient.

Gaskell in 1882 classified the attributes of the heart muscles as follows:

1. Rhythmicity—the faculty of rhythmically initiating an impulse.
2. Irritability or Excitability—the capacity for receiving a stimulus.
3. Contractility—the faculty for responding to a stimulus.
4. Conductivity—the ability to convey a stimulus.
5. Tonicity—the power to maintain cardiac tone.

The first four have distinct varieties of arrhythmias corresponding to them, demonstrable in electrocardiograms. Disturbances of the fifth, tonicity, is exemplified by cardiac dilatation and is outside of the scope of this paper.

1. Disturbances of rhythmicity of the heart muscle is due to either increased sensitiveness of the sinus region of the heart, which is known as the pace maker, or to increased irritability of the vagus nerve which, under conditions of emotion, youth or toxicity, will respond to reflex impulses which are usually too slight to cause stimulation.

This type of arrhythmia is called physiological, sinus, vagus, neurogenic or respiratory arrhythmia and, except when associated with Cheyne-Stokes respiration or with signs of cardiac failure, has no serious significance. It may be so extreme as to make diagnosis doubtful without a graphic tracing, though usually the wave-like rise and fall of rate with respiration, the transient character and its abolition by atropin, will reveal its nature and reassure the fears of the patient or the nurse who has discovered an irregular heart.

2. In extrasystolic arrhythmia the excitability of the heart muscle in abnormal sites is evidenced, though the normal sinus rhythm is maintained for the most part. A premature contraction may arise in the wall of either ventricle or auricle, and is felt at the pulse as a missed beat or as a small beat followed by a pause longer than the usual pause between pulsations. The systolic contraction is heard over the heart, corresponding to the abnormal beat at the radial, and the compensatory pause may be noted. Premature contractions may occur over a considerable period of time, alternating quite regularly with the normal beats.

3. Abnormal contractility is shown in the rare cases of true alternating pulse and in the numerous cases of arrhythmia known as auricular fibrillation.

After reading an electrocardiogram of this type with the extremely rapid and incoordinate fibrillations of the auricle, the cause of the irregularity is seen at once. If a patient shows a decompensated heart with a rapid and irregular heart rate of 120 or over, a diagnosis of fibrillation must be made. An electrocardiogram would show innumerable small contractions of the auricle, only a few being effectual in causing ventricular contraction. Many of these are so small as to cause no pulse wave. The radial rate may be only 80, while the stethoscope gives 120, with a pulse deficit of 40.

Under therapy the heart becomes slower and steadier and the pulse deficit less until both apex and radial rate may be 70 or less. If the patient is seen at this stage for the first time, the doctor may be at a loss to diagnose the arrhythmia unless he has clearly in mind the events taking place in the heart muscle and recognizes that no two beats and no two intervals are alike and that there is no dominant rhythm.

4. Abnormal conductivity is shown in heart block, partial and complete, in which the bundle of His fails to transmit impulses. The

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ventricle may beat independently of the auricle or may respond to only every sceond or third aurieular beat, giving a 2 to 1 or 3 to 1 heart block.

In complete block the ventricular rate is very slow (35 or less) and the jugular pulsations are more frequent, showing the more rapid auricular rate. In partial bloek there may be omission of beats or a sudden halving of rate. If a beat is dropped at the radial and no systolie tone is heard at the apex eorresponding to it, the probable explanation is that the auricular contraction has taken plaee, but the impulse has been blocked before causing a ventrieular systole. Not infrequently the auricular eontraction can be heard as a faint but distinet tone.

The eleetroeardiogram gives indirect, suggestive and corroborative evidence about hypertrophy, drop heart and some of the valvular lesions, and very definite reeords of the arrhythmias and of digitalis effect.

The time may come when each patient ean have his arrhythmia diagnosticated and his therapy controlled by the electrocardiograph. But today the doctor ean best make use of this means of diagnosis by becoming familiar with the events which take plaee in the heart as shown by the electrocardiograph so that he will recognize the common arrhythmias, secure graphie reeords of the difficult ones and interpret his elinical findings in the light of the knowledge he has obtained from the study of graphic traeings.

DISCUSSION.

DR. H. L. ULRICH, Minneapolis: I want to reiterate what Dr. Hansen has said in regard to the value and importance of the electrocardiograph. Nothing in cardiac pathology within the last ten years has been so great as the contribution of the electrocardiograph to our knowledge of the function of the heart.

Some of you probably heard what Sir James Mackenzie said in Chicago at the meeting of the American Medical Association. I heard him discuss "effort syndrome" in which he brought out conclusively the fact that he was sorry the stethoscope had ever been invented, meaning by that we have been paying too much attention to the morphology of the heart and not enough to its function. The functional clinical value offered by this instrument, the electrocardiograph, cannot be appreciated too highly. Prior to the discovery of the electrocardiograph we had no conception whatever of what auricular fibrillation meant, yet that is one of the most common defects of the heart. We had no conception of paroxysmal tachycardia, which Dr. Hansen shows up —to be auricular flutter. These two conceptions in cardiac pathology have been tremendous contributions to our clinical assets. After contact with one of these machines, our clinical ideas at the bedside, including physical examination of the heart, are much more intensive.

In the study of the treatment of heart disease, and particularly in the use of digitalis, this instrument is of value. Twelve hours before our clinical methods, this instrument can show us the effect of digitalis, whether salutary or not.

The electrocardiograph has been a valuable contribution to heart disease in our city as it has been to other cities in which the instrument is used. Dr. Morris of the University has hoped to hitch up his heart station with the doctors' offices by means of the telephone wires. If this plan had failed he had been considering a portable type of electrocardiograph. The war, of course, has stopped all these experiments.

I urge you all to become acquainted with this instrument when the opportunity presents. The matter is not so deep and so intricate as the curves exhibited by Dr. Hansen suggest. It is a simple instrument if one understands the fundamental features which are really the physiology of the heart interpreted in graphic form.

DR. HANSEN (closing): One should not expect miracles from the use of the electrocardiograph. It does not give definite information above valve murmurs. Occasionally a doctor will ask whether this instrument will give more definite information of a valve lesion than the stethoscope. The information it gives about a valve lesion is limited, but as regards the function of the heart it will give you more information than anything else.

IRITIS.*

J. H. James, M. D., F. A. C. S.,
Mankato, Minn.

While there is a searcity of new faets eoncerning this disease there are some old ones that we need to reiterate lest we forget, and this is my only exeuse for presenting this paper. One of these reiterations is, that there are too many mistakes made in the diagnosis of this disease and we therefore need to have our mind refreshed occasionally in order that a lasting impression may be made and the sad consequenees to us and our patients may be less frequent.

*Read before the Southwestern Minnesota Medical Society, May 9, 1918.

It is a serious matter when, from error of diagnosis and of treatment our patients lose an eye. Authors describe inflammation of the iris under several heads, such as Acute, Congenital, Acquired, Idiopathic, and Traumatic; Primary, Secondary, Simple or Complicated.

The acute attacks come on like a simple conjunctivitis and for this it is often mistaken. The symptoms begin with discomfort or pain in the eye, and this soon spreads to the brow and down on to the cheek, gradually becoming worse and is especially worse at night.

There is redness of the ocular vessels, particularly those adjacent to the corneal border. This redness begins as a pink color which might easily be taken for "pink eye," but it soon becomes of a darker hue. By this time the eyeball has become tender to the touch and as the inflammation becomes fully developed the globe becomes exceedingly sensitive, lachrymation and photophobia supervene; there also begins a discoloration of the iris which takes on a muddy appearance, the corner loses its lustre, and the pupil becomes contracted and responds feebly, if at all, to light or accommodation.

About this time an exudate begins to appear at the pupillary border which is glue-like in consistency and this forms adhesions with the iris and lens capsule with which it is in contact. If these adhesions are not discovered promptly they form synechia, the pupil becoming bound down and attached at its border often causing occlusion and blindness. This comes on so insidiously as to be often beyond remedy before we are fully aware of it, and when the attachments are in spots, it results in an irregular dilatation of the pupil whenever it responds under treatment to a mydriatic. In the earlier stages these adhesions can be prevented and sometimes they may be broken up —when they have recently formed—by the prompt and persistent use of an effective mydriatic; but when they have occurred, they often leave a spot of brown pigment where the attachments have been on the lense capsule and these spots rarely ever disappear. They remain as small black specks before the eye ever afterwards. There is always more or less lowering of vision in iritis, owing to the cloudiness of the aqueous humor, to deposits on the lens capsule or on the inner layer of the cornea, or from exudate in the pupillary space or the vitreous. The accommodation is interfered with and may be one of the causes of dimness of vision. Occasionally we meet with cases in which pain and redness are either absent, or so slight as to pass practically unnoticed, and in such, the impairment of sight may be the only symptom complained of.

Impairment of sight should always make us suspicious, for when we find this symptom, something is radically wrong. This form is so insidious that the patient is hardly aware that there is anything the matter until he notices that vision has failed.

As to the pathology of iritis, we find that there is enlargement of the blood vessels of the iris both in length, breadth and calibre.

The endothelium is displaced by fibrinous exudate which penetrates the iris like a sponge and overflows into the anterior chamber and pupil.

There is increased leucocytosis and in some cases hemorrhage, especially in septic iritis.

Etiologists have hitherto conceded that fifty per cent. of cases of iritis are due to syphilis, and that the attacks occur in both congenital and acquired syphilis. This statement however, is now being seriously questioned by many who believe that it has been exaggerated, holding that it is rarely a primary cause, but, that by destroying the bodily resistance may thereby act as a contributing or concomitant cause. At the recent meeting of the Southern Medical Association, Dr. John Green, Jr., is reported as saying, "We are getting away from the idea that syphilis is responsible for all the cases of iritis. We used to be surprised, if we found a case in which syphilis was not the true etiology. Every source of focal infection should be investigated."

Dr. Eu Laney Madson also said, "Syphilis is rarely a direct cause of iritis, it is a more of a predisposing cause, a condition that lowers the vitality and makes the individual more susceptible to the infection."

So we are beginning to see that focal infection is now taking the lead as an etiological factor in producing iritis.

There are other etiological factors given such as gonorrhoeal rheumatism, pyorrhoea alveolaris, dyspepsia, and acid diathesis.

The latter should in my opinion be classified with rheumatism for I believe true rheumatism *per se* is always an acid diathesis and that they are one and the same thing. There is no other disease which has the unequivocal, absolute pathognomonic symptoms that accompany rheumatic fever, and therefore I claim that most of the so-called rheumatism is not rheumatism at all. For instance, gonorrhoeal rheumatism is not rheumatism, for no one will dispute its bacterial or infectious origin.

Iritis I am inclined to believe is almost always due to infection. It is almost never seen in rheumatic fever nor during convalescence from the disease, and for this reason I believe it is never the cause of iritis.

That bacterial infection may and does cause iritis I do not question, but I have yet to be convinced that inflammatory rheumatism is ever a cause of the disease. There has always been some element of doubt concerning rheumatism as an etiological factor, notwithstanding the fact that our text books taught it, and this skepticism has become more prominent today than ever before. Dr. Jackson of Denver reports only one case seen in his long practice in which he could attribute rheumatism as a cause. It is undoubtedly true that many cases of iritis are associated with subacute articular maladies, which are supposed to be of rheumatic origin, but according to modern views, I understand that these cases are associated with chronic septic infection, often oral in origin, and in many cases "these varieties of iritis and iridocyclitis which have been classed as 'rheumatic,' are now classed as toxic, in order to conform to improved etiology." These forms of iritis are as a rule accompanied by severe pain, but cases may be of the quiet kind and repeated attacks are apt to occur, and, as opposed to syphilis may be confined to one eye.

My own belief is that uncorrected refractive errors and heterophories are predisposing and concomitant causes of some of the iritie and other ocular affections although I do not find these so classed in ocular etiological or other literature.

The constant compromising adjustments that have to be made by the ciliary and extrinsic muscles of the eyes in the attempt to focus and to see clearly in eyes so afflicted, I can readily imagine might lead to disarrangement and affection of these delicate structures and thus to pathological metabolism and inflammation. This is particularly true if there happened to be a focal infection anywhere in the system. It would then be liable to manifest itself through the bacilli or toxines attacking overworked, weakened and depleted organs or tissues. This inference seems to me to be a reasonable one notwithstanding the fact that it seems to have been overlooked or ignored as unworthy of mention so far as my investigations have led me to discover in ocular literature.

I shall not enlarge on the varieties of iritis, such as the serous, diagnosed by the formation of dust-like looking deposits on the inner layer of the cornea, and seen only with the high powers of the ophthalmoscope, with cloudy vitreous and pupillary adhesions, or diabetic iritis —a rare form—but will say that toxemic iritis has an undoubted entity and probably belongs to a fair proportion of the so-called idiopathic, as suggested by a late writer in the Encyclopedia of Ophthalmology.

Among five hundred cases reported and observed in the "Wills Eye Hospital" in 1899, syphilis was given as the cause in three hundred and seven cases. Rheumatism came next in order, one hundred and twenty-seven cases; gonorrhoea, twenty-six cases; influenza, seven; but other than as above, sepsis was not mentioned. Irons and Brown record one hundred cases, giving syphilis as a cause in twenty-three; gonorrhoea, nine; tuberculosis, eight; and other infections, thirty-eight.

As to the diagnosis, iritis is frequently mistaken for acute catarrhal conjunctivitis, however, a careful attention to the following points will generally clear up the diagnosis. Conjunctivitis presents a discharge, uncomplicated iritis never. In conjunctivitis the greatest redness is situated posteriorly, while in iritis it is more prominent just around the corneal border. The redness in conjunctivitis is more superficial and the vessels when pressed upon may be made to disappear, while in iritis the deeper vessels are injected and when pressed upon do not so readily disappear as do the more superficial vessels in conjunctivitis.

The iris in conjunctivitis will respond to light and accommodation while in iritis, if it responds at all, it will do so sluggishly and is often contracted and immobile. Vision is not

diminshed in conjunctivitis, barring the spreading of mucus over the surface of the cornea, or if complicated with keratitis. In iritis vision is reduced, and the color of the iris is changed, while in conjunctivitis the iris is not changed in either color or its lustre. In conjunctivitis the pupil dilates readily under a mydriatic while in iritis if it dilates at all it will be slow and sluggish and perhaps irregular.

Acute inflammatory glaucoma may be mistaken for iritis but if so and treated as iritis the result in all probability would be disastrous.

The following points noted should prevent such a mistake. In iritis as previously stated the pupil will be small, in glaucoma the pupil will be dilated. In iritis the patient will probably be under forty-five years of age, while in glaucoma the probabilities are that he will be past middle life. In iritis the tension of the eyeball will be augmented at the height of the inflammation but in glaucoma it will be increased intermittently or permanently.

The anterior chamber in iritis is normal while in glaucoma it will be shallow; the cornea in iritis will be sensitive in glaucoma it will be anesthetic, and acute glaucoma is ushered in with vomiting.

In the treatment of iritis there are three important considerations to be observed; first, to keep the pupil fully dilated, so long as the inflammation continues; second, to search out diligently the cause and if possible remove it, and the third, to relieve the pain.

From the beginning to the end of the inflammation it is absolutely necessary to secure complete dilatation of the pupil and to keep it thus in order to prevent synechia and to break up any that have formed if it is possible to do so. For this purpose sulphate of atropia should be used in sufficient strength to accomplish the purpose. It is used in one per cent. solution, one or two drops in the eye every two hours until the pupil becomes fully dilated, and used sufficiently thereafter to keep the pupil at its maximum dilatation. A one per cent solution of cocaine is often used in conjunction which is said to augment the mydriatic power of the atropine and a five per cent. solution of dionin dropped into the inflamed eye every five minutes for a few times will produce a lymphagogic action and help to absorb adhesions and to relieve the pain.

The atropine puts the ciliary body and iris at rest, prevents the dangerous adhesions and relieves the congested vessels. It may be found that the strength of the atropine solution has only a partial effect on the pupil in which case it may be made stronger. At the same time the patient should be watched to see that no constitutional effects occur therefrom. I have sometimes been obliged to use the atropine in powdered form before satisfactory results could be obtained. Hot applications as hot as can be borne should be applied either dry or wet, against which an electric bulb lamp may be held for twenty minutes or half an hour three or four times a day. When the pain is great, blistering of the temple, or blood-letting by means or an artificial or a live leech, if obtainable often gives great relief from the pain at night. Aspirin has been recommended in ten grains and even in greater doses, and even morphia may sometimes have to be resorted to in order to give relief from the pain and sleeplessness. Always begin the treatment by evacuating the bowels by a dose of calomel followed by a saline cathartic.

General treatment should be instituted in accordance with the etiology discovered; the nose, throat and teeth should be carefully examined, and if possible an X-ray picture taken to ascertain if there be any concealed foci of infection present; if found they should be removed. One of our local physicians about three years ago had a violent attack of iritis in one eye which was persistent, exacerbations returning from time to time with vicious adhesions occurring within a few hours after each recurrence and for which no cause could be determined. It was supposed to be of rheumatic origin until finally the dentist discovered a small sinus alongside of a tooth which led to a root abscess. When the tooth was removed the iritis got well and remained well. Vaccine treatment has been successfully reported in gonorrhoeal iritis and also in tubercular and the iritis of streptococcic origin. Anti-streptococcic polyvalent serum treatment, also the cyanide of mercury injected under the conjunctiva is said to give rapid and marked improvement in obstinate cases, but with these I have had no experience.

The great objection to constitutional remedies is their slowness of action, and we must therefore use remedies that can be relied on to act quickly and within a few hours.

The majority of patients who come to me suffering from iritis have diagnosed their own case as a simple conjunctivitis or pink eye and not getting well as they expected have either consulted their family physician or have come direct. By this time synechias have developed. If having consulted a physician the condition has not been fully recognized in the beginning, or if insufficient energetic measures have been employed so that the pupil is only partially dilated, permanent injury has occurred.

Therefore it is my wish to impress this fact, that iritis is often a very insidious disease in its beginning; it is often mistaken for a simple conjunctivitis or "pink eye," and therefore care should be always taken to make if possible an accurate diagnosis as set forth and to at once institute energetic protective measures to prevent disastrous effects of adhesions, for delay or mistaken judgment is dangerous.

THE RELATION OF LABYRINTH DISTURBANCES TO GENERAL SYMPTOMATOLOGY.*

HENRY A. BEAUDOUX, M. D.,
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Mr. President and Members of the Association:—The last decade has brought such a wealth of material and progress in the various fields of our profession that otology, no less than any of the other branches, claims for itself important and well crystalized advancement. For many years we were well aware that there existed an external, middle, and internal ear, the former two with demonstrable functions, but the latter, with the exception of its auditory function, remained more or less terra incognita. Otologists all over the world attempted from time to time to unravel many of the complex symptoms which seemed to find their origin in that isolated portion of the temporal bone known as the cochlea and vestibular portion of the inner ear. It remained for Barany to set a new line of thought concerning the different roles played by these two portions of the internal ear, and to demonstrate by careful experiment that they had entirely different functions. His experiments were quickly taken up by Neumann, Alexander, Ruttin, Randall, Fisher, Jones, and others who worked out more intimately the neuro-physiology through which these different phenomena took place. It was therefore satisfactorily demonstrated that the cochlea was concerned exclusively with the function of hearing, while the static portion, consisting of the utricle, saccule, and the canals were the chief organs of equilibration, and that disturbances of the static labyrinth manifested themselves by dizziness, staggering, nausea, vomiting, and sometimes diarrhea. It would be impossible in a paper of this length to deal minutely with all the tests which lead to the different conclusions concerning the prominent symptoms already mentioned, and with which we are all so often confronted in our daily practice. I must, therefore, refer you to such monograph as Ruttin's, Jones', and others for correct technique and interpretation.

The general practitioner is often confronted by nausea, vomiting, and dizziness, and it is to him more particularly that I wish to call attention to the possibilities of erring in diagnosis, though, as you may well imagine, the ophthalmologists, otologists, the syphilologists, the neurologists and general surgeons come in for their due warning concerning the same caution when they are dealing with similar symptoms.

Before giving the results of the ear tests which will clear for us, if well understood, the elimination of the ear or the differentiation between ear, eye, brain, constitutional or toxic, abdominal disturbances or lesions, it will be necessary to remember that the semicircular canals can be studied by the so-called turning movements in a purposely made revolving chair, second, by douching the ear with either hot or cold water, also that when the individual is turned in the revolving chair with the head in the upright position, the horizontal canals alone are stimulated, and when he is turned with the head forward or backward, the verticle canals are the ones that respond to the rotating movement, involving, of course, the labyrinth of both ears, while douching influences only one ear at a time and is preferable, since it enables

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the diagnostician to eliminate one side from the other. Douching the ear with the head in the upright position stimulates the verticle canals, whereas douching with the head either forward or backward, stimulates only the horizontal canal (contrary, as you notice, to the rotation test in the same position). The galvanic current or electric test concludes the list of artificial stimulation, furnishing information concerning the function of the static portion of the inner ear, but is considered less useful because, like the rotation test which stimulates both labyrinths, the electric current stimulates all portions of the internal ear including the eighth nerve itself.

In dealing with these tests I shall, therefore, only refer to the first two which are essentially sufficient to make a correct diagnosis, cautioning you, however, not to use the douching or caloric tests either with cold or hot water in cases where a preforation of the membrana tympanae is present. Quoting directly from Jones' report on these tests, he says, "You may see that the endolymph within the particular canal or canals stimulated is set in motion on the one hand mechanically by turning, and on the other hand thermically by douching. When a person is turned to the right, the endolymph catches up to the movement of the body; and when the turning-chair is stopped, the endolymph continues to move to the right by its own momentum. The physiology of the caloric test may be illustrated by the "thermosyphon" system of some of the popular automobiles. They have no water-pump to force a circulation through the radiator. The engine heats the water, decreasing its specific gravity and causin it to move upward and forward into the radiator where it is cooled, dropping to the bottom of the radiator, and continues downward and backward into the engine, thus completing the circuit. Similar, chilling the outer portion of a semicircular canal increases the density of the endolymph at this point and produces a circulation downward."

"Such ear stimulation produces certain definite phenomena in normal persons—a rhythmic jerking of the eyes known as nystagmus and a subjective sensation of turning which may be termed a systematized vertigo. The eyes are always drawn in the direction of the endolymph movement and are then quickly jerked back in the opposite direction by impulses from the cerebrum. The subjective sensation of vertigo is always in a direction opposite to the endolymph movement. According to our conviction there are only two reactions produced by ear stimulation—vertigo and nystagmus; it it because of this vertigo that the person fails in a definite direction, and also, when he attempts to find with his finger an object he has previously touched, he is unable to find it but past-points to the right or left, above or below, depending on the direction and plans of his sensation of vertigo."

"It is evident that if stimulation of the ear causes a movement of the eyes, there must be a definite nerve pathway from the ear to the cerebal cortex. The special object of our work has been the attempt to determine the pathways through the brain from the ear. On the basis of over 350 pathologic cases, including a considerable number of operations and necropsies, we have come to certain conclusions as to the course of the fibers from the ear through the brain-stem, cerebellum, and cerebrum. In brief, our conclusions are as follows:"

"The fibers from the horizontal semicircular canals pass through the eighth nerve to the brain-stem, and enter Deiterses nucleus in the medulla oblongata. At this nucleus the fibres divide, going on the one hand to the posterior longitudinal bundle, through which they are connected with the various eye muscles nuclei, to be distributed through the third, fourth and sixth nerves to the eye muscles themselves. It is this pathway that is responsible for the eye movement. The other pathway goes from Deiterses nucleus through the inferior cerebellar peduncle to the cerebellar nuclei of the same side, from which it proceeds through the right superior cerebellar peduncle to the decussation of the two superior cerebellar peduncles in the base of the cerebral crura; from this point there are two pathways to the cerebral cortex of both sides, but the main pathway goes to the cortex of the opposite side. The cortical centers that receive these fibres are postulated by Mills to be in the posterior portion of the second temporal convolutions adjacent to the cortical areas for hearing. It is this pathway from the horizontal canal to the cerebral cortex, passing through the cerebellum, that is responsible for the production of vertigo on ear stimulation.

The fibers from the verticle semicircular canals have a different pathway after entering the brain-stem, ascending in the pons to a point above the middle of the pons. At this point the fibers divide, on the one hand going to the posterior longitudinal bundle, to be distributed to the eye muscles; on the other hand the fibers enter the cerebellar nuclei through the middle cerebellar peduncle, from which point their pathway is the same as that of the fibers from the hozizontal canal. In a nutshell, by the vestibular apparatus we mean the static portions of the internal ears, and the pathways from the ears through the brain-stem, cerebellum and cerebrum."

In view of these facts, it is not overstating the case when we say that at best one could only guess as to the significance of such symptoms without the proper understanding of these tests, and that vertigo should no longer be regarded as a vague and general symptom. Biliousness, cardio-vascular vertigo, gastric vertigo, kidney vertigo and the other names so often found in our text books have no place in our ultimate analysis of cases and can have no meaning when it is remembered that vertigo cannot exist without disturbance or lesion of the vestibular apparatus. By these tests we have the means to analyze to a certainty whether the vertigo is due to an irritation, impairment, or destruction of some portion or portions of the ear or its associated pathways, and it will be very rare when a case accompanied by dizziness will remain obscure after the ear tests have been carefully made, just as a case suspected of nephritis or diabetis is readily cleared up by an examination of the urine or a positive Wassermann in a suspected case of syphilis. It will assist us to differentiate in a case of dizziness caused by toxemia, either evanescent or toxemia that have produced definite impairment of some portion of the inner ear or its pathway to the brain, labyrinthitis or other organic lesions in some parts of the vestibular tract, such as may be produced by a brain tumor, internal hydrocephalus, multiple sclerosis, tubercle, gumma, meningitis, etc., or in case the reactions are normal, we may be able to positively state that the vertigo is a purely functional one. Syphilis, which is such a common and prevalent affection, involving the central nervous system in the early incipiency of the disease, and particularly the eighth nerve, which seems especially vulnerable, is demonstrable by these tests, even though the Wassermann reaction may be repeatedly negative. A diagnosis of beginning involvement of the nervous system has been made several years before it could be detected by any other means. The progressive neurologist has not been dilatory in availing himself of the data furnished by these new tests in determining the causes of vertigo, function of the eighth nerve, labyrinth, eye-muscle palsies, spontaneous nystagmus, and the early diagnosis of syphilis. He has come to rely upon them in differential diagnosis between ear and intracranial lesions, for in many cases symptoms of internal ear disturbances simulate intracranial lesions and he has relied more of late years upon the ear test than the eye conditions, which he at one time looked upon usually as conclusive when present. It has ben my privilege to consult with eminent internists and surgeons, who after a most careful examination, could find nothing to account for sometimes slight and other times severe, but most annoying forms of vertigo, malaise, spasmodic nausea and vomiting and a general and continued indescribable "sinking spells" and to diagnose upon an analysis of the inner ear a disturbance of the equilibratory apparatus caused by either a repeated mechanical irritation of the already hypersensitive labyrinth, pathological findings in the middle ear, toxemia, either due to tobacco, alcohol or syphilis or circulatory disturbances even in the absence of actual demonstrable cardiac symptoms, except in suspected plethoric cases.

Chronic catarrhal condition with some accompanying deafness, retraction of the membrana tympani, atrophy, or tonic and clonic contractions of the tensor tympani muscle, furnish their share of such symptoms and it is in this particular class of cases that I would warn you against undue massage of Politzerization, particularly in the aged, for these patients often times suffer from arteriosclerosis and local pathological condition in the conductive apparatus of the middle ear, and much harm can be done and the disturbance of this sensitive organ without its normal compensation, giving rise to that which we all know as Meniere's symptom complex. Where deafness and tinitus accompanies the other symptoms, it is plain that

the attending physician will at once suspect some ear affection, but where this is absent one is not so apt to think of that organ as a causation factor, but when dizziness accompanies nausea and vomiting, one must at once suspect it or its intracranial pathways.

It should also be remembered that inner ear affections may be non-inflammatory and inflammatory, that the latter may need prompt interference, foreboding a grave prognosis, while the former, though accompanied by most annoying symptoms, such as deafness, vertigo, nausea and vomiting and staggering, do not as a rule endanger the patient's life and should in time be diagnosed and the patient relieved, even in cases of severe trauma, for concussion of the brain is in part concussion of the labyrinth and its pathways. These tests become important factors in traumatic cases where malingering or injury are to be detected and justice obtained where litigation is involved. Though a great deal has been written of late years concerning these new truths and that the experimentation may neurologically still be in its infancy, these are the pertinent facts which we as practitioners of medicine must constantly bear in mind in the presence of this poignant symptoms to which I have referred. I have not thought best owing to the newness and the rather difficult appreciation and understanding *a priori* of these tests, especially for those who have not given it particular attention, to deal with the fistula tests, which in itself means nothing more than some exposed portion of its vestibular apparatus in the middle ear (accidental drowning, sensitive labyrinth, perforation and fistula), nor the past-pointing test, which like the eye movements and the direction in which the patients fall during the different methods of stimulation and position of the different semicircular canals assist in the differentiation of the possible brain lesions which have been enumerated in the course of this paper. These do not really come within our sphere as otologists or general practitioners, but belong more properly to the neurologists who is especially fitting by his training and practice to draw better conclusions from the examinations made by otologists and ophthalmologists. What I have attempted to point out is that many cases that come under the observation of the general practitioner of medicine suffering from so-called slight strokes, sinking feeling, general malaise, without demonstrable organic lesions, temporary or persistent dizziness in young individuals or in the senile, either due to sclerosis or middle ear conditions and producing in many instances most unpleasant temporary or continued disturbances, should be classed first among the ear cases to which they properly belong.

Concerning the treatment of the functional neuroses it at once appears that every case must be considered by itself and treated accordingly to its individual diagnosis, the important factor, however, in the recovery is absolute quiet, rest in bed in the majority of cases, no matter what the diagnosis may be, for most of the time these patients are restless and have inclinations to do just the opposite of what their condition demands. If the case be caused by middle ear conditions, these, of course, must be corrected, if syphilitic, receive the proper treatment, if caused by brain tumor, proper localization and surgical interference determined, etc. Many of the lighter cases have come before us unrecognized and have been quickly relieved by a brisk carthartic and rest in bed for a few days, bromides and small doses of pilocarpine.

In conclusion let me say that where dizziness exists the ear must first be subjected to a rigid and careful analysis, for as I have pointed out to you, the ear alone is responsible for this symptom. The tests will show the ear to be either normal or abnormal, and, as Jones sums it up, "If the responses are normal we have narrowed the diagnosis down to (1) a purely functional neurosis, (2) ocular or vascular disturbance, (3) an evanescent toxemia, the source of which must be searched for. If abnormal, the test will help to locate the point of disturbance either within the ear itself or along its pathway within the brain." If we do this, such reported incredible errors as have been made and reported by members of our profession should rarely occur.

DISCUSSION.

DR. J. D. LEWIS, Minneapolis: Dr. Beaudoux has ably reviewed this new and interesting subject, leaving little to add that is likely to prove of practical interest to the general physician.

We are to understand that equilibration is not a function governed entirely by the static labyrinth, as the sense is a correlated one, presided over by the static labyrinth, eye muscle impulses and the kinetic sense as well. We know that when both labyrinths

have been destroyed, after a time the patient will regain normal equilibratory function, although his sense of orientation remains permanently impaired. To illustrate: One whose labyrinths are dead is able to swim upon the surface of the water as does a normal person, yet when beneath the surface of the water his sense of position is lost, for which reason, it is dangerous for him to venture under water, or attempt to fly in an aeroplane, for if plunged into a cloud bank, he would lose control of the machine, owing to his loss of space sense.

The importance of the caloric and past-pointing tests, worked out by Barany, is indicated by the fact that it brought to him the Nobel prize in 1915.

To show the practical application of the several labyrinth tests,—a person who past-points before turning, or fails to past-point after being turned, has some disturbance, either of the internal ear or along the pathways from the ear to the brain centers, or a supraneuclear lesion; therefore, we are able, by known stimuli applied to the labyrinth, to determine not only a functioning internal ear, but of intact pathways to and from the brain centers responsible for the reactions.

The various labyrinth tests have been employed by our government in the examination of aviation recruits. For the reason mentioned, it is clear that aviators must have normal equilibration and orientation. Diseases of remote organs cause vertigo by influences which disturb ones mechanism of balance.

There are two types of spontaneous nystagmus: ocular and vestibular. It is easy to differentiate between these, since the movements of the eyes in ocular nystagmus are equal, while nystagmus due to vestibular irritation has a slow movement and a quick return in the opposite direction.

Jones and Fisher of Philadelphia, who have done a great amount of work in this field, have shown that when stimulation of the internal ear produces no response, or when all the known responses are alike impaired, the lesion is to be found, either in the labyrinth itself or in some portion of the internal ear produces a marked reaction to one test with either absent impaired reaction to the others, it means that the labyrinth and eighth nerve are intact, and that a centrally located lesion is present at some point between the division of the eighth nerve after it enters the brain-stem at the point of contact of the medulla oblongata and the pons. Lesions of the vestibulo-ocular tracts are expressed by nystagmus of shortened duration. While on the other hand, blocking of the vestibulo-cerebello-cerebral pathways is indicated by an impaired vertigo.

The vertiginous attacks in patients who exhibit normal reactions to ear stimulations are explainable by an irritation due to a visual defect, or some focal infection.

I wish to impress upon you the importance of this subject, of which you are to hear more in the future. If the writer has done no more than to stimulate your interest and prepare your minds for future study and consideration of the subject, much has been accomplished.

DR. H. I. LILLIE, Rochester: The technical part of the labyrinthine disturbance is well cared for by Doctor Beaudoux and Doctor Lewis and I would just like to say something with regard to the subject matter of labyrinth disturbance in general symptomatology. The patient generally complains of vertigo. We know that it is a cerebral sensation as all conscious sensations are. It is some disturbance or destruction, as Doctor Beaudoux says, of the eighth nerve, the vestibular branch or its tracts. The general practitioner naturally raises the question; What is this lesion? Roughly, one must be able to say in general where this lesion would be. If, in a given patient with a labyrinthine disturbance, vertigo, nausea, vomiting occurs, one may say nearly where that lesion is. That is what interests the general practitioner. If that patient hears, you are not dealing with a supprative process of the labyrinth. By examining the eyes you will see whether or not there is nystagmus. Nystagmus is best brought out by having the patient turn the eyes to one side and then the other. You will see rhythmical movements. By this you will know that you are dealing with nystagmus. If the patient hears, you are not dealing with a suppurative process and therefore you have time to make a very careful differential diagnosis. If, in conjunction with chronic suppuration of the middle ear the patient has a sudden labyrinthine syndrome we are more anxious about him because it means etiher circumscribed labyrinthitis or a diffuse labyrinthitis, and if suppurative it calls for immediate surgical intervention. So, in the interest of the patient, then, we must always go into the history of his ear condition, whether there has been a suppurative process in the ear or not. Recently there came to my clinic a patient who, without any previous ear history, rather suddenly developed a labyrinth syndrome. She heard perfectly. In a careful history I found that this came on suddenly after blowing the nose very hard. Examination of the ear showed nothing but lack of tonus of the membrane. With the aid of the otoscope for examination of the motility of the membrane we found that there was no response to the compression and rarefaction of the canal. She heard perfectly, so therefore the process was not suppurative, and our labyrinth test demonstrated that the labyrinth was hyperactive.

One such patient had come under my observation who had blown his nose very hard, had this syndrome, and was confined to bed for several days until the symptoms subsided. Such a syndrome we have felt is due to change of the intralabyrinthine pressure.

DR. CHARLES R. BALL, St. Paul: Doctor Beaudoux has given a very interesting paper on a very important subject. The time has come when we must stop guessing as to whether an individual has vertigo or not, and whether that vertigo is of organic or functional origin. We must interpret Barany's tests as we have come to interpret all other tests

and reflexes in our examinations. If a test is negative and our patient complains of vertigo, we must not assume for that reason that his vertigo may not be organic in origin. Barany's tests, when they are negative, are like all other negative tests. They do not exclude the possibility of organic disease.

In a case in which I was associated with Doctor Beaudoux—a medicolegal case—the patient complained of a great deal of vertigo. We made these tests: the galvanic and caloric, and found on the side in which deafness was complained of, that both tests reacted positively, i. e., there was no reaction, while on the other side there was a regular and normal response.

Our colleagues, on the other side of the case did not make these examinations. They concluded, therefore, that the trouble was a hysterical one and when they came to testify in the trial, they so testified. We, on the other hand, testified positively that there was an organic and serious condition because we had these positive tests to guide us. We knew we were right; while our colleagues honestly, however, thought, through a lack of thoroughness in their examination, that we were faking on our testimony in the case. It was the old story over again of "where ignorance is bliss, it seemed folly to be wise." These tests should be made in all cases where vertigo is a symptom. If a patient says that he is paralyzed and unable to walk, we do not sit on the bed and speculate as to whether this paralysis is imaginary or not, but we examine his reflexes and determine whether or not he can walk. We ascertain by examination whether there is any disturbance of the continuity of the nerve supply to the lower extremities, so in cases where vertigo is complained of these tests must be carefully made as a part of our regular examination.

DR. BEAUDOUX (Closing): The one thing which I wish to emphasize, besides the fact that wherever we are confronted with vertigo, dizziness and vomiting, and, as I have already stated, the possibility of these symptoms having a direct and indirect relation to the middle ear, are the cases that present themselves with the mild symptoms of dizziness, some staggering and the often described sinking feeling, for these are the cases that have been for a long time misunderstood and allowed to suffer without relief. Let me illustrate by briefly relating a few cases: First, a male, age 64, began to complain of having sinking spells with vertigo and dizziness while splitting wood, which he did as a matter of exercise and pastime. He had seen several physicians and had been thoroughly examined without any suggestion as to the causative factor of his condition. After going through all the ear examinations necessary to make a diagnosis, I found that he had a hyper-sensative labyrinth which was hyperexcited by the use of a metallic mall and a metallic wedge. The high-pitched resounding note of these two metals coming in contact with each other was accountable for his symptoms, and after advising him to use a wooden mall to split his wood, his symptoms entirely disappeared without any recurrence. The second case of the same variety was that of a man who was unable to ride in his automobile, and had been obliged to draw to the curb several times for fear of meeting with some accident, and once had to be taken home by his son. After several negative examinations made by his family physician, internists, and others, I was able to trace his trouble to the high-pitched whistle of his engine which, when removed, left him with a complete cure of his fainting spells, dizziness and vertigo. The third case was that of a physician, a member of this society, who became suddenly dizzy and had an attack of vertigo and staggering after having played base ball with the home team on a summer's day. This patient was referred to me by Dr. Greene, who had examined him carefully without finding the actual cause of his trouble, except that it might be due to some labyrinth disturbance. His suspictions were all confirmed by examinations and tests. He was told that it would be necessary for him to go to the hospital for a month, which he did not do for three of four weeks, but finally fully recovered after following the above advice. The fourth case was that of a male, age 33, who was helping his wife wax the floors on a hot day, and felt dizzy and fell to the floor and for several months was annoyed by dizziness and staggering of a very serious character. After writing me, I advised him to come to St. Paul where my suspicions were confirmed by the examination of his labyrinth, and a month in bed with treatment and absolute rest brought about a permanent cure. You will, therefore, see that there are various degrees of these symptoms, some of them very slight and yet most annoying and endangering the patient's life and safety. I regret the time alloted for the reading of this paper would not let me relate many of these cases which have come under my notice, but I trust these few cases, as enumerated briefly here, will serve to impress upon your minds the relationship existing between these patients' symptoms and the labyrinth in one form or another.

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EDITORIAL

SALVARSAN IN THE TREATMENT OF IRITIS, IRIDOCYCLITIS AND NEURORETINITIS

Syphilis as a causative factor in ocular affections plays no small role. Acute syphilitic refractile inflammatory processes involving the optic nerve, retina, and more particularly the uveal tract, require the most potent, efficacious and quickly acting therapeutic agent known to us lest the condition result in serious impairment or total loss of eyesight. The same holds good of chronic inflammatory conditions of like nature, but to a lesser degree. Mercury and potassium iodide still remain the most reliable and efficient remedies in the treatment of syphilis. However, salvarsan acts more promptly and in not a few cases effects a favorable outcome in ocular disease where mixed treatment has failed. This statement should be qualified by adding that in ocular disease of a syphilitic nature we should not rely upon salvarsan alone. The temporary relief of syphilitic symptoms and signs resulting from specific treatment does not necessarily mean the cure of the disease. Salvarsan is but an adjunct to the mercurialization.

From time to time there have appeared in the literature case reports and warnings cautioning against the dire consequences that may befall the eyes of luetics after salvarsan injection. The subject warrants illucidation.

It has been found that atoxyl arsacetin and soamin had definite anti-syphilitic properties, but were abandoned because of their toxic effect upon nerves. According to the statistics compiled by Igersheimer (Arch. Ophthal. Bd. LXXI, 2 Heft.), thirty-seven cases of amaurosis have been reported. That atoxyl has a definite toxic effect upon nerve tissue has been proven by the injection of small and medium doses of the poison into the vitreous humor and under the conjunctiva of rabbits. In chronic poisoning, changes in the medullary sheath of the optic nerve known as the "Marchi reaction" was found.

The detrimental effects of atoxyl, chemical research has shown, are due to the fact that the drug circulates in the blood stream without undergoing decomposition, with the result that toxic tissue changes are produced through faulty elimination. The drug remains unchanged or is eventually transformed by living protoplasms to more poisonous reduction products which become incorporated with the cells. Roethig (Frankfurter Zeitschrift fur Pathologie, Band III, Heft 2) found that a series of aromatic derivatives of arsenic products caused dancing motions in mice, a phenomenon attributed to disturbances of the vestibular nerve.

In view of such untoward results it is little wonder that European clinicians accepted with reluctancy Erlich's new remedy, salvarsan. Wechselmann (The Treatment of Syphilis with Salvarsan, p. 42) in speaking of amaurosis states, "In more than twelve hundred cases we observed no such condition nor any other injury to the eye excepting in two cases, instances where the patients saw flashes of light and darkness before their eyes for a short time, and not even in the large number of cases estimated at twenty thousand in which salvarsan had been injected has any

similar instance been reported". Schanz of Dresden (Munch Med., Wochenschrift, 1910, No. 45) made a special investigation in order to determine the effect of salvarsan in diseases of the eye, and a comparative study of salvarsan and atoxyl in order to determine their influence upon the optic nerve. He points out that atoxyl amblyopia and syphilitic neuritis are distinct and characteristic affections, but more important still, that salvarsan possesses no neurotoxic properties.

If salvarsan produces no toxic effect upon normal ocular tissue, may not other alarming phenomena follow an injection? Isolated cases of iritis, iriditis and neuroretinitis have been reported in which there was exacerbation of symptoms directly traceable to administration of the drug. This may be attributable to the Jarisch-Herxheimer reaction, a clinical entity accountable for any aggravation of syphilitic symptoms following an injection of salvarsan. How is it to be explained? Ehrlich believes that the phenomenon indicates a failure of the injected dose to produce sterilization. Browning observed in the treatment of experimental trypanosomiasis with methyl violet, that a fraction of a dose necessary to produce a disappearance of the parasites actually led to an increase in their number. Iverson corroborated the above fact, using small doses of salvarsan in relapsing fever.

It is then reasonable to suppose that the Jarisch-Herxheimer denotes a temporary stimulation of the spirochaete to increased multiplication and activity. However, in most cases the reaction is produced before the drug has time to exercise its full effect, substantiated clinically by the fact that ultimately all symptoms may disappear without further treatment. At any rate, it is not imperative to administer another dose at an interval shorter than in an ordinary case (C. H. Browning and I. Mackensie, Brit. Med. Jour., Vol. II, 1911, p. 654). The occurrence of the Jarisch-Herxheimer reaction may not be avoided by substituting mercury for salvarsan, for it has been noted by several observers that this phenomenon has resulted under mercurial treatment attested by the development of a rash or the extension or intensification of a rash already present; in fact, before the discovery of the spirochaete or the Wassermann reaction, this clinical manifestation was held as an important diagnostic sign. Erlich (Wien Klin. Rundschau, Jan. 29, 1911) in the defense of his new preparation stated that the pathological disturbances of the optic nerve in recent cases of syphilis may occur not only after salvarsan injection, but also after the use of mercury.

To arrive, then, at a satisfactory basis for therapy, we may adopt the following conclusions:

1. Salvarsan, unlike atoxyl, arsacetin and soamin, possesses no neurotoxic properties.

2. The almost unanimous opinion is that arsenobenzol is innocuous to the healthy eye. Should ocular lesions occur following the administration, they are manifestations of syphilis and require vigorous treatment.

3. In the treatment of iritis, iridocyclitis and neuroretinitis of syphilitic origin, salvarsan should be administered and supplemented by mercurialization. Salvarsan is recommended because of its potency and ability to cut short the ocular syphilitic pathological process.

4. The possibility of exaggerating temporarily the syphilitic ocular phenomena, exemplified by the occurrence of the Jarisch-Herxheimer reaction, following salvarsan injection, is no contraindication to its use. Such a reaction may take place after mercurialization.

5. For reasons already cited, small doses of salvarsan are more likely to produce the Jarisch-Herxheimer phenomenon than large doses. The conclusion derived therefrom is self-evident.

THE PANDEMIC OF INFLUENZA

The present pandemic of influenza started in Spain, hence the term "Spanish Influenza" for what was formerly known as "Russian Influenza;" subsequently Portugal, France, Holland, Germany, Austria, Hungary, Russia, Italy, Switzerland, Sweden, Norway, Denmark and Great Britian were invaded. South and West Africa, India, Australia, South America, the West Indies and Canada have all suffered severely from its ravages as have we in the United States.

The invasion has followed well known routes of travel, especially shipping, and has, no doubt, been greatly accelerated by the movement of large bodies of troops. As is well known, the disease has made itself felt with more or less severity amongst most of the armies in the field. In seeking a factor influencing its spread some writers point out that the conditions of living have for some time been abnormal, especially abroad, and that the people have been suffering from an unusual strain, both mental and physical. Many persons unaccustomed to hard work are engaged in laborious tasks in munition factories and the like; and a great many women have replaced men in sundry arduous occupations. Together with food restrictions, it is quite possible that these circumstances and the unaccustomed manner of living have led in a proportion of instances to lowered vitality and weakened resistance to disease.

The definition of "influenza" is difficult, and it has not yet been determined in the present pandemic whether we are dealing with one disease or with a group of respiratory infections. Further study is needed along these lines.

A good deal of doubt has been cast on the part played by the *B. influenzae* of Pfeiffer as the causative agent. Out of a large number of workers few have found this bacillus with any degree of constancy. Mathews, however, isolated the bacillus in all of twelve cases examined. Dietrich found it in his first seven post-mortem examinations. Bergmann isolated it in fifteen out of twenty sputa examined. Evre and Lowe isolated it from twelve out of fourteen sputa. In Germany, Neufeld and Papamarku, Pfeiffer, Gotschlich and Uhlenhuth report that in the more recent cases they have found the bacillus not infrequently. McIntosh, writing in the London Lancet, raises the question whether the methods and media used for the isolation of the *B. influenzae* have been at fault, as the organism belongs to the delicate group of hemophilic bacteria which require special media for their isolation. Using exclusively trypsinised blood-agar this investigator in fifty-six unselected cases isolated the bacillus of influenza in 75 per cent. Of course the isolation of this organism from the sputa and from the lungs post-mortem does not prove the *B. influenzae* is the cause of influenza. It must be borne in mind that the mere association of a micro-organism with a particular disease does not entitle it to be described as the cause. McIntosh believes that in acute influenza there is probably an invasion of the respiratory tract by the influenza bacillus, their growth is accompanied by the production of toxic bodies, which injure the mucosa and on absorption produce a general malaise. In the more severe cases the fine bronchi and the alveoli of the lungs are affected. In the latter the walls of the capillaries, as well as the walls of the alveoli, are injured, with the result that a serous exudate takes place. In parts this exudate completely fills up the alveoli, and on this account sections of the affected lung produce a picture strikingly like that produced by phosgene gas poisoning. The second stage of the disease consists of an infection of the damaged tissues and serous exudate, with one or several of the pathogenic bacteria which are to be found normally in the respiratory tract. Thus a secondary septic bronchopneumonia is set up.

In regard to preventive vaccination in influenza, at a recent conference held at the War Office in London, at which Colonel Sir William Leishman, Deputy Surgeon-General Bassett-Smith, and other prominent British medical men were present, it was unanimously agreed that inoculations with a suitable vaccine might be expected to be of value in the control of the incidence and severity of the epidemic. The appropriate constitution of such a vaccine was thoroughly discussed in the light both of the personal experience of the members of the conference and of the information available from medical literature. It was agreed that the three following organisms only should be employed, the bacillus influenzae, the pneumococcus, and the streptococcus. In each instance it was decided that a number of different strains and types of each organism should be utilized in the preparation of the vaccine, and that these strains should have been recently isolated from cases occurring during the present epidemic and should be submitted to strict tests as to race and type prior to use.

THE ANNUAL MEETING OF THE SOUTHERN MINNESOTA MEDICAL ASSOCIATION

The Southern Minnesota Medical Association will hold its annual meeting at Mankato on January 20th and 21st. The sessions will be held in the Auditorium of the Elk's Club, and an excellent program is promised. The committee on arrangements desires to make the following announcements:

Physicians are cordially invited to bring their wives.

Hotel reservations should be made early as per the return cards which are now being mailed.

Applications for membership and payment of dues—Secretary's desk—Dr. H. T. McGuigan.

The President reserves the right to change the order of papers.

All papers are limited to fifteen minutes—Discussion, five minutes.

The physicians of Mankato will entertain the society at the annual dinner on Tuesday noon at Masonic Hall at 12 o'clock.

The scientific program is open to the public. The program is as follows:

EVENING SESSION

Monday, January 20, 1919

AUDITORIUM ELK'S CLUB

President's Address.

Fractures Considered as Potential Deformities.
Dr. M. S. Henderson, Rochester, Minn.

Some of the Old Hospitals of London, with Special Reference to the Surgical Treatment of Fistulo-in-ano as Perfected at St. Mark's.
Dr. W. J. Mayo, Rochester, Minn.
Discussion:
Dr. Archibald MacLaren, St. Paul, Minn.

Refractive Needs in Children.
Dr. Earl A. Loomis, Minneapolis, Minn.
Discussion:
Dr. E. W. Benham, Mankato, Minn.
Dr. J. H. James, Mankato, Minn.

Acute Mastoiditis.
Dr. J. D. Lewis, Minneapolis, Minn.
Discussion:
Dr. V. I. Miller, Mankato, Minn.
Dr. Horace Newhart, Minneapolis, Minn.

Placenta Praevia and Abruptio Placentae.
Dr. M. J. Jensen, Minneapolis, Minn.
Discussion:
Dr. G. A. Dahl, Mankato, Minn.
Dr. C. G. Weston, Minneapolis, Minn.

The Treatment of Fractures—New Methods and New Apparatus Used.
Dr. A. E. Wilcox, Minneapolis, Minn.
Discussion:
Dr. A. N. Collins, Duluth, Minn.
Dr. A. R. Colvin, St. Paul, Minn.

MORNING SESSION

Tuesday, January 21, 1919

Annual Business Meeting 8:30 A. M. Sharp
Scientific Program 9:00 A. M.

Roentgen Examination in Eye Injuries.
Dr. C. A. Donaldson, Minneapolis, Minn.
Discussion:
Dr. W. L. Benedict, Rochester, Minn.
Dr. Russell D. Carman, Rochester, Minn.

A Neisser—Luetic Outlook.
Dr. Harry A. Baker, Minneapolis, Minn.
Discussion:
Dr. Harry Irvine, Minneapolis, Minn.
Dr. F. R. Wright, Minneapolis, Minn.

The Treatment of Chronic Empyema.
Dr. C. A. Hedblom, Rochester, Minn.
Discussion:
Dr. J. W. Little, Minneapolis, Minn.
Dr. S. C. Schmitt, Minneapolis, Minn.

The Child Welfare Division of the State Board of Health.
Dr. E. J. Huenekens, Minneapolis, Minn.
Discussion:
Dr. Helen Hielscher, Mankato, Minn.
Dr. J. H. Adair, Owatonna, Minn.

Basal Cell Epithelioma.
Dr. A. C. Broders, Rochester, Minn.
Discussion:
Dr. Gordon B. New, Rochester, Minn.
Dr. A. W. Adson, Rochester, Minn.

A Toast to the Minnesota Medical Men in Service at Home and Abroad.
Dr. H. J. O'Brien, St. Paul, Minn.

AFTERNOON SESSION

1:00 P. M.

Prophylactic Inoculation Against Pneumonia and Influenza.

Dr. E. C. Rosenow, Rochester, Minn.

Open to General Discussion.

Chronic Ulcerative Colitis.

Dr. Arthur H. Logan, Rochester, Minn.

Discussion:

Dr. E. T. F. Richards, St. Paul, Minn.

Dr. Frank S. Bissell, Minneapolis, Minn.

Some Legal Aspects of Medicine and Surgery.

Mr. Geo. W. Peterson, Attorney at Law, St. Paul, Minn.

Subject to be announced later.

Dr. C. P. Robbins, Winona, Minn.

Discussion:

Dr. W. S. Lemon, Rochester, Minn.

Some Remarks on Epidemic Influenza.

Dr. James S. Gilfillan, St. Paul, Minn.

OBITUARY

DR. OTTO R. OLSEN

Dr. Otto R. Olsen of Winona died at his home on December 11, 1918, of pernicious anemia from which he had suffered for the last four years.

Dr. Olsen was born February 12, 1879. He attended the public schools of Winona and in 1901 graduated from Rush Medical College. He then located in St. Charles, where he engaged in the practice of medicine and surgery until failing health compelled him to give up this work. He is survived by one son, Murray Olsen of St. Charles, and by his mother and two sisters of Winona.

DR. R. S. MILES

Dr. R. S. Miles for many years a prominent physician of Glencoe and later of Excelsior, died in Tacoma, Wash., on Nov. 16, 1918. He had been in ill health for several years.

Dr. Miles was born in Belmont county, Ohio, in 1840. He served through the Civil War and soon thereafter removed to Carver county, Minnesota. In 1917 he moved to Tacoma, Washington, where he resided at the time of his death. He is survived by two sons, Dr. Robert S. Miles, Jr., of Tacoma, Wash., and Harry Miles of Owasso, Mich.

DR. C. F. MORELL

Dr. C. F. Morell of Brainerd, died on November 14, 1918, after several days of illness of pneumonia following an attack of influenza,

Dr. Morell was born in Verndale, Minn., August 26, 1887. He attended the University of Minnesota and after graduation served as intern for one year and a half at the City Hospital, Minneapolis. He practiced in Verndale for two years, and on July 1, 1918, became associated with Dr. Thabes of Brainerd.

The funeral was held on Saturday, November 16th under the auspices of the Masonic order, of which he was a prominent member.

DR. ALFRED M. WANG

Dr. Alfred M. Wang, a resident of Minneapolis for the past twenty-five years, died at his home, 65 South Eleventh Street, on Nov. 13, 1918. He had been ill for several years.

Dr. Wang was born in Norway in 1861 and obtained his early education in various European cities. He was a graduate of the medical college of the Northwestern University, Chicago, and took post-graduate training in Vienna and Berlin. He was a member of the Hennepin County Medical Society. He is survived by his widow and one sister. The funeral took place on Friday morning, Nov. 15th, with interment in St. Mary's Cemetery. Minneapolis.

OF GENERAL INTEREST

Dr. W. V. Lindsay, Winona, has moved to Fertile, Minn.

Dr. C. E. Gates, formerly of Goodhue, has moved to Anoka.

Dr. W. C. Dietrick of Waverly has moved to Truman, Minn.

Dr. A. G. Moffatt has returned to Howard Lake from Ford Sheridan, Ill.

Dr. H. E. Lucas, Champlin, has gone to Texas, where he expects to spend the winter.

Lieutenant A. E. Phillips of Delano has returned to his home from Fort Riley, Kansas.

Dr. Charles M. Tierney, Granger, Minn., after a severe illness has resumed his practice.

Dr. A. P. Lommen, who has been at Camp Shelby, Miss., has returned to his home in Lanesboro.

Dr. Theodore Holtan of Kilkenny, has entirely recovered from a severe attack of pneumonia.

Dr. O. L. Asher of Osawatomie, Kansas, has moved to St. Peter, Minn., and has taken up work at the State Hospital.

Dr. Charles F. McNevin, of St. Paul, has been ordered to San Juan, Porto Rico, according to word received recently.

Dr. H. E. Peterson, of Graceville, has moved to Granite Falls, where he has taken over the work of the late Dr. H. Kerns.

Dr. G. T. Ayers, Ely, Minn., is now stationed at Fort Sill, Oklahoma, having been transferred from Scott Field at Belleville, Ill.

Dr. Jules Gendron, Grand Rapids, Minn., has been transferred from Fort Oglethorpe, Ga., to Camp Sheridan, Montgomery, Alabama.

Dr. W. P. Lee, of Northfield, has returned home from Fort Riley, Kansas, where he has been attending a medical officers training camp.

Dr. A. E. Benjamin of Minneapolis, who has been at Camp Wheeler for the past four months returned to his home on December 10th.

Dr. W. B. Linton of Rochester, has been assisting Dr. R. M. Phelps at the State Hospital, St. Peter, during the recent influenza epidemic.

Dr. Warren A. Dennis, St. Paul, now serving in France, was recently commissioned a Colonel in the Medical Reserve Corps, according to word received recently.

Dr. Oliver S. Olson, Duluth, who recently left for Fort Riley, Kansas, expects to receive his discharge from the army and to be home again within a very short time.

Dr. I. M. Radman was mustered out of the Medical Reserve Corps at Ft. Leavenworth, Kansas, and returned to his home at Onamia, Minn., on December 16, 1918.

Dr. Walter R. Ramsey, St. Paul, now stationed at Rouen, France, was recently commissioned a Major, according to word received recently from Washington.

Dr. A. A. Giroux of Dalton, will take a six months' course in pediatrics at the University of Minnesota. During this time Dr. Giroux and his family will make their home in St. Paul.

Dr. L. L. Craven, formerly of Deer River, is now located at Kelly Field No. 1, San Antonio, Texas. Dr. Craven entered the service last spring and was recently given a captaincy.

Mrs. H. W. Hill, wife of Dr. H. W. Hill, secretary of the Minnesota Public Health Association, died at the University Hospital on November 27th of pneumonia, following influenza.

Word has been received by Mrs. E. J. Abbott, St. Paul, that her son, Dr. John Steele Abbott, who has been held a prisoner by the Germans since March, 1918, has arrived at an English port.

Lieutenant Carl Drake, St. Paul, who has been stationed at Fort Sill, Oklahoma, for the past ten months, spent a few days in St. Paul recently before going to Camp May, N. J., to join a base hospital unit.

Debarkation Hospital No. 3, located at Eighteenth Street and Sixth Avenue, New York, with accommodation of 4,000 beds and a large staff of medical officers, has established a reading room for its medical and surgical staff.

Close upon the announcement that Dr. P. C. Pilon of Paynesville had been promoted to the rank of major, comes the news that Dr. Geo. Rice, at one time connected with the Pilon Hospital, formerly a captain, has been given the same honor.

Dr. J. P. Sedgwick, chief of the department of Pediatrics, University of Minnesota, was recently notified of his appointment as consulting hygienist on pediatrics to Dr. Rupert Blue, surgeon general of the United States Public Health Service.

Dr H. F. Gammons, superintendent of the Deerwood Sanitarium has been appointed director of the publicity department of the Texas State Sanitarium for Tuberculosis at Carlsbad, Texas, and left on December 8th to take up his new position

Dr W. H. Replogle of Wabasha arrived home on December 9th after serving in the medical corps for one month at Fort Riley, Kansas. He received a captain's commission before leaving Wabasha, but received an honorable discharge and has returned to resume his practice there.

Through the death of Dr. H. N. Schmidt, Westbrook, Minn., is without a physician. A very good opening exists there for the right man. Information can be obtained by communicating with Dr. C. P. Nelson, 408 Physicians and Surgeons Building, Minneapolis.

Information that Captain Paul F. Brown of Pipestone, has been recommended for promotion to the rank of Major in the Medical Reserve Corps has been received by his parents, Mr. and Mrs. W. B. Brown, of Pipestone. Distinguished services performed by Captain Brown at Argonne are mentioned in the recommendation for his promotion.

The Medical School of the University of Minnesota offers to the county societies of the state the assistance of the faculty by way of addresses, papers or demonstrations, which may be of interest to their members. Invitation for assignments to the programs of the societies may be sent to Dr. R. O. Beard, assistant Dean, Medical School, University of Minnesota.

Dr. Francis D. Patterson, chief, Division of Industrial Hygiene and Engineering, Department of Labor and Industry, Harrisburg, Pa., is desirous of obtaining a complete list of all physicians engaged in the practice of industrial medicine.

It has been the practice of this department to hold semi-annual conferences of industrial physicians and surgeons for several years. These conferences are well attended, and a great deal of valuable matter is presented in the discussions. In order to reach all physicians interested it is desirable to have their names upon the mailing list. The next conference will be held early in 1919, and it is, therefore, essential that the names and addresses of all industrial physicians and surgeons be in Dr. Patterson's hands as soon as possible after January 1st.

NEW AND NON-OFFICIAL REMEDIES

During November the following articles were accepted by the Council on Pharmacy and Chemistry for inclusion with New and Non-Official Remedies:

National Pathological Laboratories:
Rabies Vaccine (Harris).

Schering and Glatz:
Creosote Carbonate, S. and G.
Guaiacol Carbonate, S. and G.

NEW AND NON-OFFICIAL REMEDIES

Lutein Tablets.—H. W. and D., 2 Grains. Each tablet contains 2 grains of lutein (the fully developed corpora lutea of the hog, dried and powdered). Hynson, Westcott and Dunning, Baltimore, Md. (Jour. A. M. A., Nov. 2, 1918, p. 1485).

Rabies Vaccine (Harris).—An antirabic vaccine standardized by the method of Dr. Harris and stored in vacuo. Each package contains vaccine and apparatus for the administration of one complete treatment. One dose is given daily for ten days or more. National Pathological Laboratories, Chicago. (Jour. A. M. A., Nov. 30, 1918, p. 1825).

PROPAGANDA FOR REFORM

Peneguents.—Indiana physicians have been visited by the representative of the American Ointment Company who distributes samples and discourses on "Peneguents." He admits that his preparations have not been accepted by the Council on Pharmacy and Chemistry, but attempts to offset this by a report of the National Research Council which he hands out with other "literature." A glance at the Ointment Company's "literature" makes it clear that its preparations could not be admitted to New and Non-Official Remedies. The report of the Research Council does not pretend to pass on the therapeutic usefulness of the preparations, but apparently was made to check the statements made in regard to their composition. It brings out that the composition of the ointment base is not divulged by the manufacturer, and that "Peneguent Chlor-Iodine," claimed to contain "Iodine Resub. 5 per cent," contains but 0.37 per cent free iodin, the remaining iodin having combined with the ointment base. Since the complex and semisecret character of their formulas and the unwarranted claims should have been sufficient to preclude the use of these proprietaries by the U. S. Army, it is difficult to understand why the examination was made. (Jour. Ind. State Med. Ass'n, Oct. 15, 1918, p. 374).

Digestive Absurdities.—Scientific investigations have demonstrated beyond any doubt the irrationality of the combinations of digestive ferments which go to make up the various brands of aromatic digestive tablets, and all chemists and manufacturing pharmacists are familiar with these facts. The excuse for manufacturing them is that there is a call for them. It is a question whether the physician who ignorantly prescribes aromatic digestive tablets is not more morally culpable

than the pharmaceutical house that supplies what such physicians demand. (Jour. A. M. A., Nov. 2, 1918, p. 1489).

Dependability of Dosage in Tablets.—One of its products (Aromatic Digestive Tablets) having been reported deficient by the Connecticut Agricultural Experiment Station, the Harvey Company, Saratoga Springs, N. Y., holds that it should not be criticized if its Aromatic Digestive Tablets are below the declared strength. It seems to hold the opinion that it does not matter whether or not these tablets contain the amount of ferments claimed on the label, since in any case these ferments would mutually destroy each other as soon as such a tablet came in contact with the digestive secretion. No excuse can be offered for those physicians who prescribe such absurdities as Aromatic Digestive Tablets, but neither is there any justification for a firm selling a product which it knows will not measure up to the claims made for it. (Jour. A. M. A., Nov. 2, 1918, p. 1510).

Value of Vaccination Against Influenza.—There is no conclusive evidence that the Pfeiffer bacillus plays any greater role, if as great, in the present epidemic than any other bacteria found in the respiratory tract in this disease. Also, the influenza bacillus is a very poor antigen. There is, in fact, nothing to show that definite antibodies against this bacillus develop in the course of influenza. Animal experiments show that it requires prolonged immunization before any response becomes apparent. Again, there is no record of controlled experiments on human beings with influenza vaccine. From this it is evident that vaccination against influenza is in a wholly experimental stage. (Jour. A. M. A., Nov. 9, 1918, p. 1583).

More Misbranded Nostrums.—The following nostrums have been proceeded against under the Federal Food and Drugs Act: Baker's Tubercular Remedy, containing 11 per cent alcohol by volume, sugars, potassium iodid, ammonium chlorid, glycerin, licorice, plant extractives, etc. Lee's Save the Baby Croup Specific, a liniment with a fatty oil base containing camphor, rosemary and thyme; Lee's Croup Mixture, containing over 70 per cent of lard, about 7 per cent alcohol, and over 18 per cent volatile oils, consisting of a mixture of oils of rosemary and thyme and camphor; Twentieth Century, consisting of a powder and a solution, the latter, essentially a mixture of water, glycerine, lead and zinc sulphates, acetates, nitrates, and a small quantity of perfume; Moreau's Soothing Wine of Anise, a syrup containing morphine acetate and alcohol, and flavored with anise. Professor C. E. Matthai's Victory, containing 49 per cent alcohol, 1.2 grains of opium to the fluid ounce and 3.5 per cent camphor and volatile oil, and small amounts of red pepper. Seniapersa, tablets containing asafetida, cannobis indica, and a drug containing a mydriatic alkaloid. (Jour. A. M. A., Nov. 9, 1918, p. 1601).

More Misbranded Nostrums.—The following "patent medicines" have been declared misbranded under the U. S. Food and Drugs Act, and a "Notice of Judgment" giving an account of the prosecutions issued by the U. S. Department of Agriculture for each: Jacob's Liver Salt, an effervescent preparation consisting largely of sodium phosphate, sodium sulphate, and sodium chloride; Lydia Pinkham's Vegetable Compound, containing 17.9 per cent alcohol, and 0.56 gm. of solids to each 100 c.c., with vegetable extractive material present; Maguire's Extract of Benne Plant and Catechu Compound, containing over 39 per cent of alcohol and 1–10 grain of morphine to each fluid ounce, besides camphor, catechu and peppermint; Hood's Sarsaparilla, a mixture of alcohol and water, containing about 0.9 per cent of potassium iodid with sugar, vegetable extractives, which give indications of the presence of sarsaparilla, licorice, and a laxative drug resembling senna; Booth's Hyomei Dri-Ayr, consisting essentially of oil of eucalyptus, together with a small amount of resin-like solids and a mineral oil and a little alcohol; Hill's Kidney Kaskara Tablets, an iron oxide, sugar-coated tablet carrying emodin, caffein, acid resin, magnesium carbonate and talcum; Hancock Sulphur Compound, a calcium sulphid solution; Hancock Sulphur Compound Ointment, a petrolatum ointment containing sulphur, ash (chiefly lime) and phenol; Palmer's Skin Whitener, containing ammoniated mercury, mixed with a fatty base; Grossman's Specific Mixture, a balsam copaiba mixture. (Jour. A. M. A., Nov. 16, 1918, p. 1681).

A Short Sighted Druggist.—A correspondent writes: "I went to a nearby drug store and asked for twenty-five cents worth of Liquor Antisepticus Alkalinus; I got one ounce! The druggist charged me fifteen cents an ounce, and ten cents for the container. Next time I fear I shall be forced to get "Glycothymoline!" To penalize a man who calls for an official product so as to drive him to ask for a "patent medicine" of the same general character is both poor pharmacy and bad business. (Jour. A. M. A., Nov. 23, 1918, p. 1745.)

Kennedy's Tonic Port.—Kennedy's Tonic Port was booze sold as "patent medicine." Its conflict with the law came when a bottle of the preparation was sold at a Regina drug store in November, 1917, in that the sale of alcoholic beverages is prohibited in Saskatchewan. The Saskatchewan authorities proceeded against this concern, and the drug store proprietors were convicted and fined. They appealed the case, but the judge before whom the appeal was heard decided against the concern and increased the fine. Booze is booze in Saskatchewan. (Jour. A. M. A., Nov. 23, 1918, p. 1763.)

Compound Solution of Cresol.—In an eastern institution where members of the U. S. Hospital Corps are being instructed, a bottle containing Liquor Cresolis Compositus is labeled "Lysol" so that doctors may recognize it. Comment is superfluous. (Jour. A. M. A., Nov. 30, 1918, p. 1830.)

Autolysin and Beer.—Henry Smith Williams, who exploits "Proteal Therapy," also runs a publishing concern, the Goodhue Company, and has associated with him his brother, Edward Huntington Williams. Some time ago, complimentary copies of a book, "Alcohol, Hygiene and Legislation," written by Edward Huntington Williams, and published by the Goodhue Company, were sent broadcast to physicians with the compliments of author and publisher. The book championed the

lighter alcoholic beverages and questioned the value of prohibition. Enclosed with the book was an advertising leaflet on the "Autolysin" cancer cure and a letter calling attention to a book by Henry Smith Williams on the Autolysin Treatment of Cancer. Now the secretary of the United States Brewers' Association has testified before a Senate Committee, according to newspaper reports, that a "Dr. Edward H. Williams" was employed to write articles "relating to the brewers' trade." Is the Dr. Edward Huntington Williams who wrote "Alcohol, Hygiene and Legislation" the "Dr. Edward H. Williams" who was employed by the brewers to write propaganda favorable to the brewing interests? Was the cloth-bound book, "Alcohol, Hygiene and Legislation," paid for, wholly or in part, by the United States Brewers' Association. (Jour. A. M. A., Nov. 30, 1918, p. 1846.)

Spencer's Chloramine Pastilles.—The term "chloramin" is applied to a class of chemical compounds that contain the group: NCL. The chloramin derivative sodium paratoluene-sulphochloramid has been called chloramin-T, "chloramin" indicating the character NCL group, and the "T" derivation from toluene. Sodium parabenzenesulphochlooramid has been cholramin-B, the "B" indicating its origin from benzene. Before cholramin-T and the related products came into use in medicine, John Wyeth and Brother had registered the term "chloramine" as a trademark for a pharmaceutical preparation and applied it to a lozenge containing ammonium chloride, "Spencer's Chloramine Pastilles," which in no sense is a chloramin. This misuse of a chemical term indicates the need of a revision of our trademark law which permitted the registration of this evidently misleading term. (Jour. A. M. A., Nov. 30, 1918, p. 1848.)

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

THE SOUTH-WESTERN MINNESOTA MEDICAL SOCIETY

The thirty-second annual meeting of the South-Western Medical Society was held in Worthington, on December 13, 1918. In the absence of Dr. Piper, the president, and Dr. Leebens, the vice-president, Dr. Weiser was elected president, pro tem. The following members responded to the roll call: Drs. Mork, Dolan, Smallwood, Weiser and Watson. One visiting physician, Dr. J. A. Watson of Minneapolis, also was present. The minutes of the May meeting were read and approved. One new member, Dr. M. L. Goldberg, was elected to membership. A motion was carried that the president appoint a committee to draft resolutions on the death of Dr. King, a copy of which is to be kept on file in the records of the society, and one sent to Mrs. King. Drs. Spalding, Dolan and Watson were appointed and the following resolutions were drafted:

Whereas, it has pleased Almighty God to take from us our esteemed member, Lieut. Emil King,

Therefore, be it resolved, that we deeply deplore the loss of one who so long and faithfully served us as secretary, and whose presence and genial smile always caused a feeling of good fellowship!

We extend to his bereaved wife and family our sincere sympathy and assure them that we too mourn the loss which is so hard to bear, and may they have the consolation that he had not lived in vain. What greater honor than to have died in the defense of his country.

A. E. Spalding,
C. P. Dolan,
F. G. Watson.

The following officers were elected for the ensuing year: President, Dr. J. T. Smallwood; vice-president, Dr. E. G. McKewon; secretary-treasurer, Dr. F. G. Watson. Drs. Spalding and Taylor were elected as censors for three years, their term to expire in 1921. Dr. Smallwood was elected as a delegate to the state meeting and Dr. Watson as an alternate.

Owing to the small attendance it was decided to postpone the reading of the paper written by the late Dr. King, till the May meeting.

The scientific program, which follows, was then carried out:

Intestinal Obstruction, Dr. A. E. Spalding, Luverne, Minn.

The Seventh Sense, Dr. J. A. Watson, Minneapolis, Minn.

F. G. Watson, Secretary.

PROGRESS IN MEDICINE AND SURGERY

HYPOPHYSIAL TUMORS THROUGH THE INTRADURAL APPROACH: A. W. Adson (Journal of the American Medical Association, 1918, lxxi, 721-726) states that his attention was called to the possibilities of the intradural approach to the hypophyses by Dr. G. H. Heuer of Johns Hopkins Hospital. Having obtained satisfactory results with this type of operation he reports a series of cases and describes the technic employed in the Mayo Clinic.

In a brief review of the literature it was found that the first successful extracranial trans-sphenoidal pituitary operation was performed by Schloffer in 1907. Since then, there have been numerous modifications of the trans-sphenoidal approach as well as descriptions of the transtemporal and transfrontal approaches, all of which are extradural until the sella or clinoid processes have been reached and then when the dura is incised sufficiently to expose the hypophysis.

The cases discussed by the author were patients suffering from visual disturbances; one of whom had metabolic interference. The operative procedures are: (1) A craniotomy with turning of a large osteoplastic flap over the right fronto-motor area. (2) A horse-shoe incision in the dura with its base along the posterior margin of the craniotomy. (3) Lowering of the head to permit outward gravitation of the right frontal lobe. (4) Covering the cortex with cotton and shingling it with strips of rubber tissue to avoid injury from retraction. The strips are placed on the dural flap and over the cortex as the frontal lobe is elevated, and exposure is thus obtained without stripping the dura from the

anterior cranial fossa. (5) Exposure of the hypophysis is further assisted by gently elevating the frontal lobe with an especially adapted retractor supplied with an electric light. (6) As the frontal lobe is elevated the anterior cranial fossa, the lesser wing of the sphenoid, the right olfactory nerve, the anterior clinoid process, the right optic peduncle, the right internal carotid, the optic commissure and the hypophysial lesion and left optic peduncle are revealed. (7) The optic peduncle and the commissure are gently freed and all, or the desired amount of the tumor or the hypophysis may be removed.

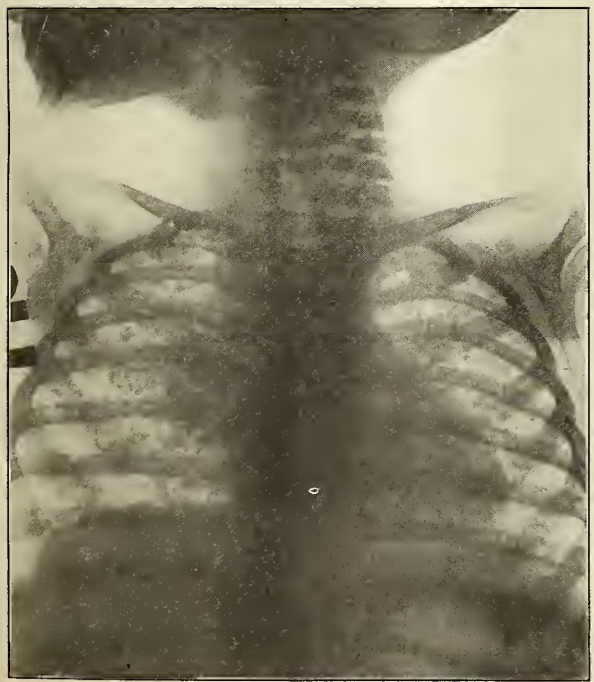
The particular advantages of the operation are, first a dry field, free from infection, and second, excellent exposure of the optic commissure and the hypophysial lesion, besides permitting radical treatment of the lesion without serious trauma of the commissure and optic peduncles since the sponging and the control of hemorrhage are done downward against the floor of the sella instead of upward against the commissure, peduncles and brain.

ACUTE MILIARY TUBERCULOSIS: Beverly A., aged sixteen months, was admitted to the Division of Pediatrics on Sept. 26, 1918, with diagnosis of malnutrition, made by the referring physician. The family history was negative except for pulmonary tuberculosis in mother's sister, with whom patient had not been in contact.

Present illness began with an attack of measles in March. Loss of weight has been progressive and there has been a slight rise of temperature every day. Both ears have discharged pus all summer. Appetite has been good and child has been on a liberal mixed diet.

A week ago a cold was contracted and since then there has been a cough.

This patient was referred to the Roentgen department on Sept. 30th under suspicion of pulmonary tuberculosis.



Von Pirquet was reported negative as were all laboratory tests. Physical signs were either absent or very indefinite in character.

The Roentgen findings were very characteristic of Miliary Tuberculosis, the lesions being diffusely disseminated throughout both lung fields.

This case is of interest chiefly because the diagnosis depended solely upon the Roentgen evidence. Objective physical signs and positive laboratory evidence were lacking.

This is almost universally true in acute miliary tuberculosis. F. S. Bissell.

THE NERVOUS MANIFESTATIONS OF SYPHILIS OF THE EYE: J. Collins (Amer. Jour. of Med. Sciences, May, 1918) gives the results of an analysis of 790 cases of syphilitic disease of the nervous system observed at the Neurological Institute of New York City. One-half of these were examples of tabes and general paresis and in 335 of these 395 cases, the size, shape and circularity of the pupil were disordered. He regards disorder of the circularity of the pupil, in the absence of obvious attributable cause, such as iritis, scleritis or similar inflammatory conditions, as suggestive of syphilis; and a warrant for the study of the cerebrospinal fluid, although it must be admitted that such alterations do occur in healthy individuals. Uhthoff found such anomalies in two per cent of 14,392 cases; others who investigated much fewer cases found a larger percentage—Ivanhoff, 9 per cent; Dufour, 4 per cent.

Collins found Argyll Robertson pupils in 467 of the 790 patients; he considers failure of the pupil to react to light as the only infallible sign of syphilis; in 25 years' experience he has never encountered the Argyll Robertson pupil in a non-syphilitic individual. He points out, however, that isolated cases have been recorded by Mees, Margulies, Nonne and others, in which such phenomenon occurred in chronic alcoholics, and in which there was no history of syphilis; and no evidences of its existence were revealed by examination of the blood serum and cerebrospinal fluid. Other instances of loss of the pupillary light reflex have been recorded in syringomyelia by Dejerine and Miraille and others, disseminated sclerosis by Van Rad, in diabetes by Biermann, in head injury by Guillain, Franke and others, and in pineal gland tumor by Southard. The statistics that have often been cited to support the statement that such pupils occur in non-syphilitics, but in which the blood serum and cerebrospinal fluid have not been examined are useless. It may be said that the Argyll Robertson pupil bespeaks the existence of previous or existing syphilitic disease of the central nervous system, though, like all rules, this one may have exceptions.

It is generally held that the prognostic significance of these pupils is grave; and that it heralds, often a long time in advance, the coming of tabes and general paresis, and other serious cerebrospinal manifestations of syphilis; this is not always the case, and the writer cites instances of 22 individuals who have had such pupils for upward of five years, without any indication of active syphilitic disease of the central nervous system.

Taking up the subject of syphilitic eye muscle palsies the writer asserts: that the frequency with which functions of the cranial nerves are disordered in syphilis of the brain, has been habitually overstated by writers. In the 790 cases upon which this study is based there was a history of diplopia in 150 cases, i. e., in about 20 per cent; and in only one-half of these were there evidences of third nerve involvement when the patient was examined. In other words, the ocular palsies of syphilis of the nervous system are often transitory and disappear spontaneously or therapeutically. They are often the earliest symptoms, especially of tabes and basilar meningitis. Besides usually transitory and amenable to treatment they are generally partial; in comparatively few instances are they permanent; in the majority of cases they are not, as formerly held, predominately of nuclear origin.

Regarding the particular nerve involved, the third was partially or completely paralyzed in 62 instances (on both sides in only 5 examples, contrary to the opinion of Uhthoff that bilateral involvement was almost as common as unilateral). The sixth nerve was affected 31 times in this series of 790 cases; and the fourth nerve was the seat of palsy in only 5 instances. As a rule, syphilitic paralysis of the third nerve is not only unilateral but partial. The explanation of this is that the lymphocytic infiltration which constitutes the essential pathologic lesion of syphilis of the nervous system may vary in size, intensity and extent; total paralysis is usually either the expression of gumma which causes compression of the trunk of the motor oculi nerve, at some place during its intracranial transit, or of an extensive basilar meningitis.

Eye muscle paralysis may occur alone or in combination with paralysis of other cranial nerves; sometimes no involvement of the nervous system is found, save an isolated ptosis or abducens palsy. Oftentimes one finde peculiar combinations of disturbances, that remain after a double-sided ocular palsy; for instance, patients who are unable to look upwards, and when they try to do so convergence results, and when they try to converge they cannot. Lipschutz gives the following explanations of this: In these patients there was originally complete oculomotor paralysis, so that they could neither look up nor converge. As a part of the restorative process new fibers grew out of the central stump. These new fibers did not, however, reach the muscle for which they were originally intended; they were deflected, and instead of going to the rectus inferior they went to the rectus internus. When the patient makes the effort to look upward the impulse goes through the internus instead of the inferior. This interpretation of Lipschutz seems to have been accepted in a way by ophthalmologists. But it is not characteristic of syphilitic lesions. It may occur in any disease that distroys the roots of the nerve while the nuclei are preserved.

Regarding syphilitic infection of the optic nerve, Collins found that this occurred more frequently than was expected, and in 95 cases of the entire number there was disease, either inflammation, choked disc or atrophy, postneuritic or simple. It is strange and inexplicable that optic nerve atrophy is rarely observed in general paresis, and this was illustrated in the writer's series of cases by finding but one instance of this anomaly. The affection of the optic nerves in syphilis of the brain, whether it be choked disc, optic neuritis or atrophy, may be the result of increased intracranial pressure, the direct effect of the meningeal proliferation or pressure from a gumma.

It may likewise be due to syphilitic disease of the brain, especially of the anterior quadrigeminal or the geniculate body. Involvement of the trunks of the optic nerves may take place at any part of their course, but they are most liable to the affected at the chiasm, and the changes that take place in the fields as well as in the nerve itself are most variable.

Finally the writer takes up the question of the amenability to treatment of the nervous diseases of the eye due to syphilis. He has never seen an instance of disorder of the pupils caused by syphilis of the nervous system disappear spontaneously or under treatment. Some of the muscle paralyses yield to treatment readily, others are most rebellious. The important matter is to distinguish one from the other.

"In a general way it may be said that the vast majority of cases of muscle paralysis associated with symptoms that justify the diagnosis of meningitis, especially those coming on abruptly, yield to treatment or recover spontaneously. On the other hand, those due to nuclear lesions (which are apt to develop insidiously) are rebellious and unamenable, but the majority of permanent ocular palsies are not of nuclear origin.

Some of those that are nuclear at the end of life may have once been radicular.

Some eye palsies are dependent upon destructive lesion of nerve bundles that cannot be regenerated. The longer an ocular palsy has been in existence the more unfavorable, as a rule, is the outlook."

Optic neuritis and choked disc, unaccompanied by symptoms of increased intracranial pressure, often disappear almost magically under appropriate treatment. Collins has never seen a case of primary atrophy yield to treatment, nor has he seen optic neuritis develop after the use of salvarsan. In conclusion he calls attention to the fact that ophthalmologists have a unique opportunity to aid in the early detection of syphilis of the nervous system. Patients who show pupillary anomalies, particularly in size, contour and responsiveness to light, should be counseled to report to their physicians for examination of the blood serum and cerebrospinal fluid, with the same seriousness as they are sent for investigation of the urine when retinitis albuminurica is found. No case of disease of the nervous mechanism of the eye that has its origin in syphilis should be considered beyond recovery, or unsuitable for treatment, save primary nerve atrophy that has gone on to completion.

Carl L. Larsen.

THE SECRETORY PRESSURE OF THE LIVER WITH SPECIAL REFERENCE TO THE PRESENCE OR ABSENCE OF A GALLBLADDER: F. C. Mann and J. P. Foster (Amerieaan Journal Physiol, 1918, xlvii, 278-282) states that previous work by Judd and the author had demonstrated that the extrahepatic ducts

dilate after the removal of the gallbladder. This result seemed to be due to interaction of the pressure exerted by the liver and the sphincter at the duodenal end of the common bile duct. It seemed desirable to know whether the secretory pressure of the liver varied in species of animals with a gallbladder from those without one. Previous work on the secretory pressure of the liver is reviewed. The pressure was measured in the rabbit, guinea pig, striped gopher and goat, species that possess a gallbladder, and in the white rat and pocket gopher, species that do not possess a gallbladder. From the results of the experiment the following conclusions were made: (1) The secretory pressure of the liver was found to vary considerably in the various species of animals. The reason for this is not clear; there may be many causes, however, the presence or absence of the gallbladder does not seem to be one of them. (2) The secretory pressure of the liver appears to be somewhat greater in unanesthetized animals than in those under an anesthetic, but since the data obtained on anesthetized animals were only comparative, the conclusion that the presence or absence of the gallbladder bears no relation to the secretory pressure of the liver is justified.

SPLENECTOMY FOLLOWING RADIUM TREATMENT FOR MYELOCYTIC LEUKEMIA: H. Z. Giffin (Presented before the Association of American Physicians, Atlantic City, N. J., May 7, 1918) states that the operative mortality of cases reported in the literature of splenectomy for myelocytic leukemia has been extremely high (85 per cent). The remarkable remissions, brought about by radium exposures over the spleen alone in the series of cases reported from the Mayo Clinic encouraged the trial of splenectomy in certain cases at a time when the spleen is relatively small and the general condition of the patient good. The spleen was removed in eighteen instances after it had been reduced by radium. One patient died, an operative mortality of 5 per cent. Nineteen of the twenty patients were operated on during the last twenty months. Nine have since died, ten are living, most of them in very good condition. The total duration of the disease in eight of nine patients who have died was two years or more. The total duration of disease in six of the ten patients who are living, is less than two years. It is fair to assume that the duration of disease bears the only definite relationship to the length of life after splenectomy. There is no definite variation, from the life expectancy for the disease. Six of seven patients operated on within the first six months of onset are living, but no conclusions can as yet be drawn from this fact. Four patients with a chronic type of the disease showed a total duration of the disease of from six to ten years. It may be concluded that in certain chronic types of fibrous spleen and low leukocyte count, splenectomy, after proper reduction of the spleen, may be warranted from the standpoint of the patient's comfort. In the author's opinion a review of the series at this time reveals no reason to believe that the duration of the disease is altered in any definite way by splenectomy.

BOOK REVIEWS

MEDICAL WAR MANUAL NO. 5. Lessons from the Enemy. (By John R. McDill, M. D., F. A. C. S., Major Medical Reserve Corps, U. S. Army. Illustrated. Published by Lea and Febiger, Philadelphia and New York, 1918. Price, $1.50.)

The author, after having had an opportunity for medical service in this war in England, France, Germany and Austria, selected Germany as the most interesting field in which the American army had no military medical observer, and one about which least had been written in spite of the much vaunted efficiency of German methods. He accepted accordingly the directorship of a unit financed by a German-Austro-Hungarian society of Chicago, and to comply with the neutrality proclamation of the President, resigned his commission in the Medical Reserve Corps with the understanding that he would be commissioned immediately on his return. He arrived in Germany in June of 1916 and secured permission to study the German military medical department, spending time on the Western front and also the Eastern. He was struck with the preparedness of the Germans for this war and that many of the amazing things accomplished by the German army were based on their adaptation of American ingenuity. The surprises first practiced by the Germans he noted were later adopted, improved and turned against them with full-fold efficiency despite the tremendous odds against which the Allies fought.

The "German medico-military organization in war, is carefully studied as is the "sanitary service in the German army." The "military base hospitals in Germany" are discussed thoroughly, but the "medical and surgical aspects of the war" are only superficially touched upon as would be expected when one considers the rapidly improving character of the purely professional work.

"In addition to the minutely thought out official sanitary corps with its punctiliously drilled personnel and its perfect equipment, there was a vast system of semi-official and volunteer relief organization ready to be put into service at the first call for mobilization." This system is considered thoughtfully.

About one-third of the book is given over to the "re-education of the war disabled," "the orthopedic hospitals, schools and workshops" and "artificial limbs or protheses." An appendix shows blanks, circulars, etc., used in this connection.

The author calls attention to the German organized community life for health in peace and in war, to the use which each person is put to for common good, according to the peculiar fitness of the individual; the preparation which is made to supply the necessary replacement for each man when his fitness for a certain line of work is no longer shown and the transfer of the replaced individual to something else.

A prophetic and warning note is sounded that after the war America can not disregard the appeal that will be made to her for help, due to the loss of medical men,

the failure to keep up the supply by education and a consequent shortage of modernly trained doctors; that Ameriea must realize this gigantie duty and wonderful opportunity which lays on her medieal profession to eare for her national health and to assist devastated Europe; that America must prepare herself now by increasing and strengthening the eountries' eenters of medical, surgical and sanitary edueation, supplying them with students.

C. E. Smith, Jr.

THE SURGERY OF ORAL DISEASES AND MALFORMATIONS. Their Diagnosis and Treatment. (By George Van Ingen Brown, D. D. S., M. D., C. M., F. A. C. S. Third edition. Eith 570 engravings and 20 plates, and a selected list of examination questions. Published by Lea and Febiger, Philadelphia and New York, 1918.

This work, like its predecessors, is profusely illustrated by many original drawings and euts, and the author has also drawn largely upon the work of other authors in order to enhance this feature of the work. The author's training in dentistry gives the orthodontie features of the work special value and, to those desiring reference to this field, the book should prove helpful.

The subject of anesthesia is touehed upon, a variety of methods being mentioned with sueh brevity that the reader will be compelled to look elsewhere for authoratative information concerning this subjeet. To illustrate: Novocain is referred to only eonjointly with stovain and its almost universal aceeptance as the best and only anesthetie for a large variety of oral and dental work is not even intimated.

Attention very naturally is focussed on the section upon Harelip and Cleft Palate, to which the author has devoted approximately 76 pages.

Under Etiology, "maternal impressions" is given considerable prominenee and it would seem that the author had not sufficiently emphasized the fact that "maternal impression" is not considered good form at this time in the best scientific circles.

In laying down the prineiple of treatment, the text shows no change from the last edition. The same arguments are presented in an effort to show that early operation upon the lip, or reposition of the separated maxillary bones, is bad practiee. To one who is familiar with the work of Brophy, and who has examined and talked with adults who were operated upon in infaney, by him it is difficult to understand why his work should be so unequivoeally eondemned. Assuming that the prineiple of early reposition of the maxillary bones by wiring followed soon by the closure of the lip, is wrong, it is to be regretted that the author finds it necessary to present euts of patients who had had the misfortune to lose portions of the jaws and lips from sloughing. Quite naturally, the presentation of cases of this kind, which do not in any manner reflect the outeome of the normal wiring operation, may fail to convince the reader that the early restoration of the bones, which promote their union and bring the nose into the eenter line, is bad practiee.

For the palate operation, the lateral incisions are recommended, although it is quite definitely proved that that is unneeessary in the vast majority of cases. Lead plates in this situation are eondemned on account of their uncleanliness, while silver plates of the author's design are recommended. It is difficult to see the philosophy of this, and one is constrained to feel that the application of lead plates, as designed many years ago by Brophy, differs very little from the method proposed by the author, from the standpoint of uncleanliness.

Thirty-six pages are given over to War Surgery, in relation to facial injuries, and much of value appears here.

An appendix appears at the end of the book giving a list of examination questions, which invites mental exercise on the part of the student and is an innovation.

R. E. Farr.

MEDICAL WAR MANUAL NO. 6. Laboratory Methods of the United States Army. (Compiled by the Division of Infectious Diseases and Laboratories. Offiee of the Surgeon-General, War Department, Washington, D. C. Illustrated. Published by Lea and Febiger, Philadelphia and New York, 1918. Price, $1.50.)

Members of the Surgeon-General's staff drawing freely on standard large works have compiled this volume as a handy manual for use in the Army laboratories of the various eantonments and elsewhere. Its purpose is to serve as a guide and to make uniform the methods of proeedure. With this aid it is hoped to simplify the routine for various members of the Medical Reserve Corps as they be transferred from one station to another without curbing originality.

The directions for securing speeimens are brief and to the point. The methods given for preparation of media stains, etc., are sueeinet. The steps of the various tests are earefully outlined.

The book should fill the purpose for which it was written admirably and in addition will be of great value to physicians in eivil life who do their own laboratory work.

C. E. Smith, Jr.

GYNECOLOGY. (By William P. Graves, A. B., M. D., F. A. C. S., Professor of Gynecology at Harvard Medieal School; Surgeon in Chief to the Free Hospital for Women, Brookline; Consulting Physician to the Boston Lying-In Hospital. With 368 half-tone and pen drawings by the author. Second Edition, thoroughly revised. Published by W. B. Saunders Company, Philadelphia and London, 1918. Priee, $7.75.)

Although but two years have elapsed since the work first eame out, the author has found it expedient to re-write and eonsiderably amplify the seetion on the relation of gyneeology to the internal secretions. Also a new part has been introdueed dealing with the relationship gynecology bears to the sex impulse as advocated by Freud. Many new figures, too, have been added, the drawings for which, like most of the illustrations in the book are the handiwork of the author himself. The volume is indeed a masterpiece, full and eomplete, yet eoncise and to the point.

F. E. Leavitt.

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ORIGINAL ARTICLES

A MEDICAL SERVICE WITH THE BRITISH EXPEDITIONARY FORCES IN FRANCE.*

Ernest T. F. Richards, M. D.
St. Paul, Minnesota.

With American troops pouring into France, and American doctors closely following to care for those incapacitated through injury or disease, this is an appropriate time for us to consider some of the problems which our medical colleagues already over there, as well as those who expect shortly to go, will have to meet.

Military medicine differs greatly from civilian, and when one enters an enormous military hospital, such as those now found so numerous in the War zone, one is at once impressed with the fact that he confronts an entirely new realm in medicine. This is probably true of both surgery and medicine, but in medicine in particular one meets with problems dealing not only with totally new clinical syndromes but with the greater ones of their undiscovered etiology and unguided therapy. It then becomes a matter of learning quickly from first-hand experience how to grapple with such interesting problems as trench fever, gas poisoning, epidemic jaundice, trench feet, shell shock and many others.

This truth—that the gulf between civil and military medicine is vast—was impressed upon me during the winter of 1915 and 1916, when, as the officer in charge of the medical division of a military hospital in France, I welcomed the opportunity to study first-hand in the British Army Medical Service the same problems that the American Army Medical Service is now meeting.

TRENCH FEVER

Our hospital formed one of a chain of those attached to the British Expeditionary Forces and was kept filled during that winter with the sick and wounded from the Northern Sector of the British line. One of the most important conditions we met was Trench Fever. You are all now familiar with the term. Its great importance in military medicine of today can not be overestimated. It forms as pressing a problem now as any encountered in the War zone as, although of itself non-fatal, the morbidity resulting from it on the Western Front probably exceeds that from any other disease. Those affected with it are in many instances permanently unable to resume their former duties, and some pass back into civil life incapacitated and a charge on the state. The importance of the disease is also emphasized by the fact that in its later stages it is a direct cause of a large percentage of the "irritable heart" of the soldier, of neurasthenia, myalgia, and of so-called "chronic rheumatism" in many of its manifestations. You see, therefore, at a glance how great the need is of most careful study of this condition.

Definition.

Trench fever is now known to be a blood infection communicable from man to man by the louse and possibly other parasites. It may best be defined as a relapsing fever occuring with great frequency among troops on active service and presenting a uniform group of symptoms which conform with no previously described condition.

* Presented before the Annual Meeting of the Minnesota State Medical Association, Duluth, August 28-30, 1918.

Etiology

Although we now know trench fever is conveyed by lice, the causative organism of the disease yet remains to be discovered. While we were in France every case of fever that came into our wards—and they came in large numbers—was carefully investigated first from the standpoint of etiology. Fortunately our hospital was equipped with an excellent laboratory so that it was possible to carry out very complete bacteriological studies on all cases. One or two only of the entire number proved to be paratyphoid fever, while not a single case of true typhoid was seen. This is a glowing tribute to the protection afforded by the anti-typhoid and anti-paratyphoid inoculations which every individual—soldiers, nurses, doctors, etc.— is compelled to receive before entering the War zone. So also, no case of acute rheumatic fever occurred in our entire series—striking evidence against any relationship between this disease and exposure, as practically all of our cases came directly from the trenches where they had been subjected to the most rigorous and changeable climatic conditions. Another interesting fact was that under such conditions acute follicular tonsillitis was extremely rare. True influenza was never proved to occur in-so-much as catarrhal symptoms of the upper respiratory tract were rare, and also careful examinations of sputum and blood cultures were invariably negative for the influenza bacillus.

In those cases of pyrexia clinically diagnosed as trench fever our bacteriological studies like those of others were uniformly negative. Such studies included blood cultures, cultures from stools and urine, careful search of fresh and stained blood films, and cultures from muscles and the subperiosteal areas of the long bones.

Though the etiological factor, therefore, in trench fever is yet a matter for speculation, the infectivity of the disease has been proved by Capt. McNee of the British Army Medical Corps through its ready transmission from one person to another by means of the blood. This investigator, using healthy soldiers who volunteered for the experiments, found that the disease is transmissible in every case by the whole blood whether injected intravenously or intramuscularly. He found that blood corpuscles after being washed several times in salt solution to remove the plasma were still infective. Blood corpuscles were broken down and the hemoglobin-tinted fluid passed through a filter in an attempt to prove the virus an ultramicroscopic one confined to the corpuscles. The fluid when injected, however, was not found to be infective.

The report of the British Trench Fever Commission published last month has corroborated these findings of McNee's and has also added further important experimental data. Amongst these are: That the excreta of infected lice when applied to a broken surface of skin readily produce trench fever; that the bites alone of infected lice do not bring about the disease; that the bodies of infected lice when crushed on the broken skin are capable of producing trench fever; and that the infection is not a disease of normal lice, but in other words, infection can only be conveyed by lice that have fed upon an individual already infected with the disease.

Clinical Course

The onset is usually sudden and sometimes is exceedingly abrupt; the patient may suddenly feel giddy with a burning head, he shivers and may be very short of breath. In such cases of abrupt onset the soldier may have to fall out if on parade or marching and often has great difficulty in returning to camp without assistance. He complains of severe headache, especially frontal and behind the eyes. This is rapidly followed by pain in the lower part of the back, and on the second or third day in the legs. With this pain in the legs there is often tenderness on pressure over the shins. The tenderness is most marked over the lower half of the shins and may be very severe, comparatively little pressure causing the patient to cry out with the pain thus produced. A less degree of tenderness is often present in the calf muscles. The patient generally shivers but there is never a definite rigor. He is occasionally flushed and often sweats profusely. The appetite is lost. Leucocytosis averaging from 10,000 to 15,000 may be present during the attack. There is no rash.

Depending upon the duration and type of trench fever two clinical forms are recognized:

(a) the short, and (b) the long. In the short form the temperature rises rapidly to between 102 and 104 degrees Fahrenheit. On the third or fourth day the temperature suddenly falls to normal or sub-normal but there is no corresponding improvement in the symptoms. After an interval of a few hours the fever again rises and then after another two to five days it returns to normal. On this occasion there is immediate relief of all symptoms and the patient is fit for duty almost at once.

In the long or periodic type, which is the typical relapsing form, the temperature rises to between 101 and 104 degrees on the day of onset. With the fever there are the typical symptoms: frontal headache, conjunctival congestion, shivering, sweating, pain in the lumbar region and in the shins with tenderness of the shins and calf muscles. After a period varying in length from twenty-four hours to five days the fever drops and all the symptoms disappear. The patient may then be thought to be well and sent back to duty, but after a period of usually five to eight days the fever and other symptoms, especially the pains in the shin, reappear. On this second occasion the febrile period usually lasts about forty-eight hours. It is followed again by a remission and subsequent relapses, or there may be a period of unstable temperature. Eventually a certain percentage of the patients pass into a stage of chronic ill health, suffering from recurrent pains in the limbs, headaches, nervous manifestations such as mental depression, excessive tendency to sweating, disordered action of the heart and abnormal responses to stimuli. The infection, in some cases, is very persistent, and acute febrile relapses may occur after months of quiescence.

Prognosis.

About ninety per cent of trench fever cases yield to symptomatic treatment and are able to return to duty in four to six weeks. In the remaining ten per cent the disease pursues a more obstinate course and may show febrile relapses after periods of several months, or there may be permanent ill health as a result of myocardial irritability, recurring myalgias, or nervous exhaustion.

Prophylaxis

The prophylaxis of trench fever rests upon the extermination of lice. This, under the conditions of modern warfare, is a very difficult problem. To render the men themselves louse-free, the chief measures consist of shaving the hairy parts of the body, hot tubs, and smearing the underclothing with a louse-destroying grease. It might seem that it is not always convenient in trench life to carry out such procedures. However, it is very surprising how quickly the systematic parading of troops from their billets or dugouts and their thorough disinfestation has become a part of the modern military regime. The best louse-destroying grease has been the subject of innumerable investigations. At present the most satisfactory grease for application to the underclothing is composed of crude naphthalene, four parts, and soft soap, one part (Bacot and Copeman).

Clothing, blankets and kits are best disinfected by heat. Dry heat is preferable as clothing may then be worn immediately after treatment. A temperature of 55 degrees C. for thirty minutes, or 60 degrees for fifteen minutes, is necessary to kill lice and their eggs with certainty. Such temperatures, however, will not disinfect the excreta of lice. The necessary temperatures for this purpose have not yet been determined (Byam et al.).

To rid billets, dugouts and huts of lice they are fumigated. The best gases to use for this purpose are sulphur dioxide or hydrocyanic acid gas. The latter is dangerous except in buildings which can be readily ventilated, but it is the more certain of the two (Byam et al.).

Finally, in the prophylaxis of trench fever, as in the case of other infections, there figures the problem of carriers. This matter is at present a subject of most careful investigation by the British Sanitary authorities. With the disease subject to relapses over indefinite periods of time, the carrier problem is necessarily proving a difficult one to control.

Treatment.

Therapeutic efforts have so far proved unavailing in shortening or modifying to any appreciable degree the course of trench fever. Rest, provided it is begun early enough, followed later with moderate exercise and thyroid

therapy, has in the hands of some apparently lowered the subsequent incidence of disordered action of the heart.

The salicylates will in some cases relieve the intense shin pains, but many require morphine. Salvarsan and quinine have proved useless. The sera of convalescent patients have been injected intravenously without influencing the course of the illness.

Of the numerous local applications used for the painful shins, cold compresses of saturated magnesium sulphate solution, first recommended by Captain D. S. Harvey of the R. A. M. C., seemed in our series to give some relief.

GAS POISONING

Turning from this brief sketch of trench fever, let us glance for a moment at what is perhaps the most tragic condition the medical officer in France has to combat—Gas Poisoning.

There have been innumerable gases employed in this war. As soon as an antidote is found for one a new gas is invented.

CARBON MONOXIDE GAS

Explosives forming CO gas in large quantities when suddenly dissociated are very common in modern warfare. No harm is done by the liberation of this gas in the open air, but in dugouts, caves, mine galleries or deep mine craters, severe and even fatal cases of poisoning occur. The same blood changes, symptoms and treatment apply in these cases as in CO poisoning in civil life.

DRIFT GASES

During the winter we spent in France chlorine was the most popular drift gas with the enemy and "gassed" cases were numerous on our service; during the course of a single night for example, over one hundred victims of this appalling method of warfare were admitted to the medical wards. Chlorine formed an excellent drift gas as, (1) a 1 to 10,000 concentration rapidly puts a man out of action—by asphyxiating him, owing to its intense irritative property; (2) it is much heavier than air; (3) it is manufactured in huge quantities in trade processes; (4) it is easily compressible into cylinders for convenience of transport and handling. Moreover, a respirator is easily contrivable to protect the person who manipulates the brigade gas attack; and it is obvious that no drift gas can be used offensively from which the users are unprotected.

Pathology.

The pathological findings in individuals dead of gas poisoning may be summed up as follows: most intense congestion with hemorrhages, edema, and emphysema of the lungs; dilation of the right heart; submucosal hemorrhages of the stomach; and venous congestion of the brain due to the asphyxial character of the death.

Symptoms.

The extent to which an individual is affected by the poisonous fumes differs greatly and depends largely upon how securely he is able to protect himself with his gas helmet at the time of the attack. The use of these helmets has cut down the mortality rate from gas attacks wonderfully. Both the British and French soldiers place great faith in them as a means of protection, and many of them told us that if they had had their helmets on in time, or if the masks had not been torn, they wou'd have escaped poisoning entirely. In those most seriously affected the picture of suffering presented almost beggars description. The main clinical symptoms may be classified as follows:

Cyanosis;
Dyspnea;
Cough with profuse expectoration;
Pain in the chest;
Irritation of the throat;
Salivation;
Conjunctivitis;
Stupor;
Headache;
Epigastric pain;
Nausea and vomiting;
Fever.

Physical Findings.

The chief physical findings are of course in the lungs. Difficult rapid respiration and pain upon breathing are prominent. Over both lungs, and most marked over the lower lobes, there is impaired resonance ranging from slight to well marked dullness. Throughout the chest,

frequently obscuring the heart tones, harshened breath sounds accompanied by rales of every known variety are the prominent findings upon auscultation. Especially notable are the coarse, bubbling type of rale situated at the lung bases. In about 2 per cent of our cases broncho-pneumonic patches of consolidation appeared at the end of the first week of illness. In one case of the series, a large serous exudate occurred in the pleural cavity in the fourth week.

Feeble heart tones, increased pulse rates, low blood pressures, and occasional definite myocardial dilations, are the chief circulatory phenomena.

Other physical findings are: evidences of laryngeal irritation; cyanosis; heavily coated tongue, often of a greenish yellow color; foul breath; tenderness in the upper abdomen, being in some patients very marked; and, depending upon the depth of the stupor, diminished pupillary, skin and deep reflexes.

Course of Illness

In the majority of our cases, even in those classified as mild, both physical signs and symptoms were very slow in clearing up. This was especially true of the cyanosis, which showed great tardiness in disappearing and a marked tendency to return upon slight exertion, such as sitting up in bed, even when all other evidences of poisoning had gone.

Dizziness was another obstinate symptom and often while not present while lying in bed, was frequently very troublesome during convalescence when attempts were being made to get the patient up and around. In several cases, owing to the dizziness, confinement to bed was necessary during the entire stay in the hospital—which extended sometimes to five and six weeks, after which, if not sufficiently well to be transferred to a convalescent camp, the patients were sent to England by hospital ship.

Cough and expectoration were also slow in improving and persisted in many cases well into convalescence.

Fever of slight or moderate degree lasted in the most severely ill throughout their entire stay in hospital.

Convalescence, even in mild cases, was slow and attended with considerable muscular and nervous exhaustion. Several patients, after a five weeks' stay in bed, had to be shipped on stretchers to England to convalesce. Recurrence of cyanosis and dizziness on exertion, coupled with a low blood pressure, an accelerated pulse, and anemia, frequently made their further convalescence exceedingly tedious.

Treatment

The treatment adopted by us for this distressing condition consisted of:

Enforced rest in bed;
Fresh air;
Forced nourishment;
Expectorants;
Oxygen inhalations;
Venesection;
Atropine sulphate;
Strychnine, digitalis and morphine.

It is somewhat problematical which of these measures were of the greatest moment, but with a large number of the cases desperately ill on admission, the total mortality rate under this regime was only 3.5 per cent.

Rest in bed with the maximum amount of fresh air, the patient being kept as warm as possible, and forcing of nourishment, were undoubtedly important factors in saving the lives of many.

Of the expectorants, ammonium carbonate used early helps to clear up the copious frothy sputum.

Inhalations of oxygen strikingly relieve the air hunger, the cyanosis and the distressing dyspnea. In those most seriously ill it was freely used at short intervals, the patients themselves frequently begging for it. When possible the patient should be kept in an atmosphere of pure oxygen until al' alarming phenomena have disappeared, even if this requires a continuation of the oxygen supply for several days.

A most important measure is venesection. In those cases showing extreme cyanosis, greatly labored breathing, or right heart dilation, venesection was employed with very great benefit. It was followed in each instance by a distinct lessening of the cyanosis, diminution of the headache, and improvement in the other symptoms. From our observations it would appear that this measure to be of most

value should be carried out early and repeated if necessary at rather frequent intervals, with the withdrawal of only moderate amounts of blood on each occasion.

Atropine sulphate, in large doses hypodermatically, was of definite value. Strychnine was of doubtful, but in a few instances of some apparent value. Tonic doses of digitalis, after the acute stages of the poisoning had subsided, and particularly during convalescence, was distinctly beneficial.

SHELL GASES

At the present writing, drift gases have been largely replaced on the Western Front by shells containing chemicals in liquid form generating toxic gases in the presence of moisture. Dichlorethylsulphide, better known on account of its odor as "Mustard Gas" has been extensively used by the Germans since they first employed it against the British troops in July, 1917. When such a shell strikes an object a special fuse explodes a chamber of picric acid, bursts the shell, and sprinkles the liquid over a large area.

Since November, 1917, a new chemical has been identified in German shells. This substance, commonly called "Arsine," is diphenylarsine-chloride. As found in the clothing of gassed men, it consists of fine solid particles having a strong garlicky odor (de Tarnowsky).

In both mustard gas and arsine the symptoms are: severe epigastric pain accompanied by repeated emesis; coryza of varying severity; conjunctivitis with profuse lacrimation and in some cases photophobia; cutaneous symptoms such as, erythema, severe itching, blisters and edema. After two to three days a painful laryngitis, often with aphonia, followed by severe bronchitis, develops.

The shell gases have been most successfully met by the British and French medical men and the mortality rate has been very low. The most important means of protection are the gas masks provided with the proper antidotes (which obviously for military reasons cannot be discussed at this time). The general management of these gases is similar to that described for chlorine poisoning. Gastro-intestinal symptoms are fairly well controlled by the daily administration of 100 c.c. of a 1 to 1,000 solution of saccharate of lime. For the eyes, sodium bicarbonate washes give relief. For the respiratory tract, th application, by means of an atomizer, of a protective oily solution such as liquid albolene gives excellent results in the milder cases; for the severe cases, intratracheal sprays are employed. For the skin lesions the British employ douches, bathing, and wet dressings of sodium bicarbonate solutions; the French treat all their burns with a protective dressing of guttapercha (6 to 10 per cent) and paraffin (90 to 94 per cent), made popular under the name of "Ambrine."

INFECTIOUS JAUNDICE

Infectious jaundice, another important medical problem occurring among the troops in France, was of especial interest because of its striking similarity to the infectious jaundice seen in civil practice. The condition is substantially the same as that described in 1886 by Weil and since known as Weil's disease. As is well known, widespread epidemics of this condition have been recorded in the United States. Its chief features are: jaundice, fever, hemorrhages, and the occurrence of cases in epidemics or localized groups. The Japanese worker, Inada, and his collaborators, have established from a study of the disease appearing in Japan that the infection is caused by a spirochete—the spirocheta ictero-hemorrhagica. The organism appears to gain access to the human individual through the alimentary canal, and possib'y also through the skin. Lice have been considered as possible intermediate hosts, but the tendency now is to blame the field-rat, as Inada and his coworkers have succeeded in finding the spirochaetae of jaundice in the kidneys and urine of 38 per cent of ordinary field-rats in the infected areas in Japan.

That it is possible that other organisms, such as the B. paratyphosus, may be factors in the production of epidemic jaundice must be kept in mind, but it would appear that the great majority of cases of infectious jaundice met with in armies on campa'gn can be accepted as examples of Weil's disease.

The clinical course of the infection as we observed it in France was of a fairly uniform type. The onset may be abrupt with a chill; or more gradual with 'ntense headache, dizziness, nausea, persistent vomiting, diarrhoea,

and abdominal pain. An irregular fever develops, and jaundice appears in 48 to 72 hours, at times of but slight degree, but gradually deepening in the severe cases. Hemorrhages into the skin and conjunctiva may take place. Bleeding from the nose, mouth, stomach or bowels may occur in the severely jaundiced cases. A decided albuminuria with numerous casts and red blood cells is a striking feature. In the severe cases the prostration is practically a collapse. The muscular soreness prevents movement. The legs may be swollen. Active delirium may be present. Drowsiness with slowness of the pulse is common. After three or four days, in a mild case, the fever gradually drops, convalescence slowly begins, and the yellow color gradually fades. Slight or severe febrile relapses may occur, or a mild fever may continue for twelve to twenty days. In a fatal case, the jaundice deepens, vomiting is marked, the temperature becomes subnormal, prostration is extreme, and the patient dies of exhaustion. Physically, jaundice of greater or less degree, with injection of the conjunctivae, herpes, dry tongue, sordes, and late appearing papular rashes in a severely prostrated patient, make the general picture of the disease. The abdomen is usually tender, and resistant if the pain is extreme. The liver and spleen are usually not enlarged.

The prognosis may be said to be favorable, even in the more severe cases The death rate averages less than six per cent. The virulence of the disease as seen by us in France is much less than that described in Japan.

The treatment of infectious jaundice is at present purely symptomatic. Good nursing, unlimited fluids, fresh fruits, and the rectal administration of glucose (6 per cent solution, 1 pint) once or twice daily in cases with vomiting and acetonuria, are the main indications.

Many other conditions, as for example, shell shock, trench feet and trench nephritis, make together with those we have discussed, an active medical service in a military hospital a rich and treasured experience. But apart from this and the valued associations one makes, to the doctors who serve comes the greatest recompense of all—the conviction that they form an absolutely essential and indispensable factor in winning the greatest war ever fought for the sake of humanity.

NEURO-CIRCULATORY ASTHENIA (IRRITABLE HEART), STUDY OF 35,000 DRAFT RECRUITS*

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The statistical data furnishing the basis for this discussion and paper was secured while the writer was acting head of the Cardiovascular Board at Camp Dodge, Des Moines, Iowa, as a contract surgeon. In view of the fact that these findings and data are necessarily very incomplete, it would seem better not to even ask the Surgeon General's office for permission to publish them, but rather to leave them unpublished at the present time. No doubt at some later period, after the whole work of enrolling the army has been surveyed, these figures will all be properly correlated by the Surgeon General's office and published. In the meantime, a discussion of the very important phases of heart action, as demonstrated by the examination of these draft recruits, must be of great interest, and it is well for the profession to begin to think along the lines developed as soon as possible.

As a basis of discussion, the following points may be briefly enumerated:

1. Any estimation of heart capacity must include accurate counting of the pulse, standing, recumbent, after stated exercises, and then two minutes later. The character of the response will aid more than all else in determining whether the individual will withstand prolonged effort or not.

2. There is a limit to the capacity of every heart. In a sturdy normal this is arrived at only after the most exhausting and prolonged and heroic effort. In a very large group of people with so-called "unstable' or "irritable" hearts, this limit is arrived at in a very much shorter time, and on occasion occurs after almost any effort.

3. The difficulty of naming this condition arises from the fact that it does not speak for an intrinsic cardiac condition, but is rather an evidence of general fundamental lack of development. "Effort syndrome" is likewise a misleading term, because in addition to effort, emotion perhaps plays an equally strong role

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in producing symptoms. Neuro-circulatory asthenia, speaking for a broader conception of the condition as understood up to date, seems a better cognomen, and draws attention to the general, fundamental and nervous constitution of the individual.

4. Relatively speaking, the role played by this symptom complex in the rejection of recruits, is coming to assume greater importance than true organic valvular heart disease, and requires greater experience to interpret and properly classify. It must be granted that the personal factor and experience of the examiner will count greatly as a factor in the total.

5. Systolic murmurs as isolated findings, have no significance in determining for or against rejection of recruits, nor is their position, intensity, or points of transmission of any particular consequence.

6. As a cause for rejection, diastolic murmurs heard in the classical areas indicative of aortic insufficiency and mitral stenosis, are of the greatest importance, and are often the easiest murmurs to overlook. It is to be remembered that these diastolic murmurs when typical and distinctly heard, may be always taken to mean an organic heart lesion.

7. Practically no cases of mitral stenosis—with the typical presystolic murmur and thrill at the apex—are encountered in which a clean cut history of rheumatic fever or other infection is not to be elicited. Conversely, great numbers are seen in which suggestive systolic murmurs at the apex, with doubtful cardiac hypertrophy is to be made out, in which there is no such history of rheumatic fever or infection. It is therefore fair to assume that these cases do not represent true valvular disease, and is additional evidence of the untrustworthiness of these murmurs. The importance of a rheumatic history is testified to by the evidence in the English army, that men who have had acute articular rheumatism as a rule are poor soldier material.

8. Cardiac hypertrophy does not occur in uncomplicated cases of mitral stenosis. It is the chief deciding factor in the diagnosis of mitral insufficiency in addition to a rheumatic history. If absent in an instance of aortic insufficiency, uncomplicated, it is additional evidence of syphilitic aortic disease. The determination of cardiac hypertrophy is best arrived at through palpation of the apex beat and estimating the left border of the heart 1 cm. farther to the left from the midline. This method will usually closely approximate the fluoroscopic outline. Percussion is notoriously uncertain.

9. Certain symptoms exhibited by the neuro-circulatory asthenic, such as tachycardia, sweating and a coarse tremor, suggest hyperthyroidism. The suggestion, however, is far more apparent than real. The two conditions are separate and can be differentiated, although it is stated that true irritable heart is seen in the toxaemia of pulmonary tuberculosis and in hyperthyroidism. It may also occur in the convalescence of normal individuals from any acute infection. The discussion should be limited rather to those cases showing the signs of breathlessness on exertion, tachycardia under emotion and exertion, sweating, and a series of vasomotor phenomena, precordial and chest pain, without obvious extraneous causation. Causation is more to be sought for in congenital deficiencies and incomplete development.

10. These cases are not cardiopaths, and great caution should be used in drawing attention to their hearts. No doubt many of them need medical counsel, but a large place should be given in this to a complete analysis of their physical and psychical makeup. Without any direction the most marked neuro-circulatory asthenics have chosen for themselves labor of a non-exhausting type and free of heavy responsibility: waiters, barbers, elevator operators, telegraph and general office employes. Most of them admitted that they had tried heavier work and could not get along. This furnishes us a good suggestion. The old adage of "square pegs and round holes" comes to mind.

DISCUSSION OF THE PAPERS OF DRS. RICHARDS AND TUOHY

DR. C. L. GREENE, St. Paul: I was greatly interested naturally in Dr. Tuohy's admirable presentation of this question of the heart of the soldier. I myself have had the valued opportunity to act in the same capacity at the same camp during the first draft, at the time the first men were coming in. We worked under conditions of great difficulty. Everything was crude; noise was everywhere, and we had nothing to work with except our eyes, ears and fingers. There was no apparatus. Yet, practically, my experience,

and I think our data, would correspond very closely with the figures presented by Dr. Tuohy.

We have had a great many cases of irritable heart which were largely due to excitement, and in part due to the intensive training. We referred those back for a period of ten days, and sometimes two weeks, with the result that most of them came back to us in good shape, with the excitability of the heart removed. We did have quite a number of cases of masked mitral stenosis, that is, atypical cases of mitral stenosis. I think we overdiagnosed those. We did that because of a special warning on the part of the Surgeon General, that he wanted everything of that kind eliminated. We had a number of cases with what appeared to be a pre-systolic thrill, for example, and an accentuated first sound, which I believe were simply excitable hearts with more or less loss of muscle tone, but they were thrown out, anyway, for the good of the Army.

I was delighted to hear Dr. Tuohy say that the soldier's heart is not an entity. If anything was borne in upon me during my work at the cantonment, it was that I was seeing just such hearts as I had been seeing and had been writing about and talking about at this Association and others, for many years.

Just a short time ago I had occasion to review the literature of soldier's hearts. It was enormous. From 1864 to 1917 it was an academic question. All of a sudden it became a most intensely important one, and therefore I found the amount of literature we had up to the time German magazines were cut off—the English, French and so on—was voluminous. It was impossible in fact for me to get through it all. I still have some to go through.

It showed very clearly that defective heart in the case of the soldier is a very complex proposition. You have of course a great many instances of unrecognized valvular defects, unrecognized myocardial disease, and unrecognized infections, leading to myocardial toxemia. And in the foreign armies particularly those seem to have largely gone unrecognized, and they have had difficulties which we have not experienced in the fact that their draft ages were higher, and the element of myocardial degeneration prevailed to a much greater extent than is the case with our youths. Practically all of the cases that Dr. Tuohy and I saw were of the juvenile type, both as to irregularities, in my own set of cases at least, and as to any valvular lesions present.

Then they found abroad, I think, a larger percentage of men breaking down in their preliminary training. No doubt that training was carried on very unwisely. I have no doubt the same thing was true in many instances in our own army. Men not in perfect health were taken from sedentary pursuits and were at once inducted into physical exertion which they were unable to sustain, but which they might have been trained to sustain.

Then, of course, there is a group which breaks down under disease, to which I will not refer, which has been already spoken of by both Dr. Richards and Dr. Tuohy—disease acquired in the trenches; and those that break down in action.

I have been fortunate enough to have had several cases of soldier's heart in soldiers who have actually been in action and acquired their trouble there, and I have been at some pains to draw from them a description of the conditions. We cannot lay too much stress upon that. You have in all such cases the elements of immense shock, tremendous shock, and sustained or recurrent excessive over-erertion.

Let me speak for one moment of what Dr. Tuohy referred to as the congenitally deficient heart. I have talked to you many times about that in the last few years, and I will not attempt to discuss it at any length now. Every country is full of these congenitally deficient hearts. They usually go with congenitally deficient musculature. The greater number of them are cases of congenital visceroptosis and the heart, as well as everything else, is ptotic. They may be trained up to be good hearts. I think one would find, even in research at the front, a large number of dropped hearts with no symptoms arising from them, but on the other hand, a very considerable percentage do not permit of a reserve heart force that will carry them through the severer aspects of war service. That would seem to me to be the proposition.

With regard to the great work which is being carried on by Lewis and McKenzie, and the work of the Commission under Lewis, I was struck by one very peculiar thing, a thing which seemed to me to vitiate to a considerable degree the value of the work. As I recall it, Lewis in his report said that they allowed as representing the normal heart boundary, a distance up to $10\frac{1}{2}$ or 11 centimeters from the median line. If one figures upon that as the normal heart boundary, dilatations are going to go unrecognized in a very large percentage of cases. As I have had occasion to state many times, by using the long distance X-ray method, we have found hearts that would not measure in the median left diameter, over let us say $5\frac{1}{2}$ centimeters. The inference is obvious. If you have certain hearts that measure from $5\frac{1}{2}$ to 6, 7, or 8 centimetres as a maximum normal, and you are working on the basis of a normal which represents $10\frac{1}{2}$ to 11 centimetres, you have a possible variation of nearly 50 per cent. You would have a possibility in other words, of not recognizing a dilatation of 100 per cent in regard to that left diameter. I am surprised that that very simple fact, that easily probable fact, has not been given more attention.

The heart problem in our Army is one of the biggest I think that we have to face, and there is going to be, and there is already, a tremendous amount of cardiac disability.

If I understood Dr. Tuohy, the method of sélection was the same during his regime at Camp Dodge as it was during my own. That is, Dr. Tuohy and the surgeons of the different units passed on the men first. Then we will say the regimental surgeon took a hand. We found in our work an enormous variation in the number of cases, in the proportion of the number of cases rejected by different units. That seemed to mean that some men were catching hearts and others were letting them go through; and those that the careless or the unfit men failed to recognize as defective hearts

went straight into the Army without passing through the hands of any expert carido-vascular man. Such cases are going to have trouble.

With regard to the systolic murmur, unassociated with a history of rheumatism or what not, let me say that I think in the greater number of these cases you are dealing either with a congenitally deficient heart or more often with cases of masked sub-infection, in other words, where you get those murmurs you have an ordinary microbic toxemia. We see that constantly in civil life again and again. My belief is that while a considerable proportion of the men who present such an appearance and such signs as Dr. Tuohy has emphasized will hold up all right, even in infantry service, a very considerable proportion will break down because of deficient reserve, unless the existing sources of sub-infection, hidden foci, are removed—the tonsils, the gall bladder, the appendix, the teeth and all such things that are working in that direction.

DR. GEORGE D. HEAD, Minneapolis: I did not intend to discuss these papers, but the subject I have to present is somewhat allied to this whole question of the neurasthenic individual; and that borders upon some of the problems presented. I have had a little experience in examining between 500 and 1,000 men from the training camp at Fort Snelling, studying them particularly with relation to their fitness for aviation. And while we had a specially selected group of men, our instructions were to pick only the perfectly fit, and therefore of course we encountered the difficulties which have arisen in all of the other camps in attempting to differentiate between persons with organically defective hearts, and those who have the symptoms of circulatory disturbances without the evidence of organic disease.

It has seemed to me that in this whole matter, there is an occasion for the revision of the teaching in our medical schools, with relation to the recognition of organic heart disease. I almost am sure that the average student in our medical colleges is taught to pay altogether too much attention to the objective findings and too little attention to the careful history,

My experience for years, in a large hospital practice and in considerable private work in connection with cardio-vascular conditions, is that the average young man in going over a case for evidence of cardiac disease, neglects his history, neglects to find out much about what has happened to the individual prior to the time of the examination, and rushes at once to the question of whether or not he has a cardiac murmur to deal with. He attempts to differentiate a whole variety of different kinds of cardiac murmurs, and attempts to determine from the accentuation of this sound or the other, the disease present, rushes to his cardiograph and his electro-cardiograph, and fails to even find out many times, whether the individual has had an attack of acute articular rheumatism

I was mighty glad to have Dr. Tuohy's figures so clearly bring out what to me had been a fundamental point in connection with cardiac lesions, and which I was taught as a young man in various clinics to lay great emphasis upon, and which you will find ramifying all through the literature; namely, that one of the most important points in determinig whether an individual has a cardiac lesion or not, is to determine first, whether he has ever had acute articular rheumatism, and having determined that, you are in a fair position to determine when you hear the evidence of cardiac disease, whether or not he has a real organic lesion.

Of course, that does not answer at all the question. as to whether or not these men are fit soldiers, because a man may have myocardial changes due to other infections, such as Dr. Greene has well emphasized. My own notion would be that the vast majority of these young individuals with murmurs probably are persons who have had some type of infectious myocarditis. That does not mean, however, that they may not be made fit soldiers by a proper course of training. Our American notion is to train these men intensively, make good soldiers of them in from three to six months. I do not think that physically this can be done. These men, taken out of civil life, who are not used to these long marches and excessive strain and exercise, ought to be trained gradually into it.

If you have a man with a weak myocardium, due to some infectious disease, such as tonsilitis or otitis-media or typhoid or scarlet fever in childhood, and put him into training, the exercise outlined for him to do must at first be light and the more severe training and drilling taken up only after weeks of the lighter form, otherwise he is going to break down.

These men ought to be put in a group by themselves and trained under medical supervision.

In our experiences with these about 1,000 men whom we examined for aviation, in which I was doing the examining of the doubtful men, we laid down the rigid rule that we would pay no attention to murmurs, that unless we could find that the man had definite evidence of organic change in the way of a definitely enlarged heart, with the signs of organic change, plus a history which would suggest it, we passed him. The only doubtful fellows were those with hearts that were irregular or had occasionally dropped beats, or those that showed a tendency to tachycardia. Those we were not so sure about; for the others, we laid down the very definite rule that if a man was normally healthy and his heart functioned all right, and he had carried on his athletic work,—most of these men were athletes or had been,—no matter what the auscultatory signs in the heart might show we passed them.

DR. H. W. HILL, St. Paul: I would like to ask Dr. Richards the relationship between gas poisioning and the fever associated with it.

DR. E. T. F. RICHARDS (closing the discussion): In answer to Dr. Hill's question, the association is that of infection following the irritation of the respiratory tract, and the fever is secondary to the very severe bronchitis which develops.

Concerning the soldier's heart—when one works in a big military hospital he is very quickly convinced that the heart is in a great many instances merely an index of the individual's general neuro-circulatory condition. Among the reasons for paying close attention to the neuro-circulatory asthenics, and to all soldiers

showing the "effort syndrome," a very important one is that such men are particularly susceptible to shell shock. We found in men brought to the hospital with shell shock, that they were, with few exceptions, of the so-called asthenic type. In our work in France ws were dealing almost entirely with British soldiers who were for the most part from large cities, and many of them were started out in life with defective muscular, bone and nervous mechanisms. This was the type that was the true example of what is best described as the asthenic—the small bony and muscular frame work, the tendency to the visceroptotic, and almost invariably the low blood pressure. Low blood pressures, ranging from 90 to 100 systolic, were a part of the syndrome in such individuals.

Lewis' very definite statement, backed by Sir James McKenzie's at the A. M. A. meeting in Chicago two months ago, that a heart murmur per se is not to be emphasized, is, of course, of extreme importance when considering the question of physical fitness for active service. If we had had to debar all men with systolic murmurs, I am afraid that splendid fighting machine —the British Army—would be about 50 per cent less numerically than it now is. Systolic murmurs, both basal and apical, were very common amongst the many soldiers on active service whom we examined, but only when such murmurs were definitely combined with myocardial dilatation or with a pathological arrhythmia did we ever consider that the men should not be returned to duty. We had to absolutely accept it as a fact that the systolic cardiac murmur was a common thing and in itself was no reason for debarring a man from active service.

The infections such as trench fever and infectious jaundice, are amongst the most interesting problems we encountered in France. If there had been time I should like also to have discussed that interesting condition known as trench nephritis. We had a number of such cases during our service. The amount of study that is being given to these conditions is vast and is opening up a big new field in medicine—the most interesting aspect perhaps of active service abroad.

The British Army Medical Service—and very rapidly, I am sure, the American—aims to lay before the profession as many facts as possible concerning conditions that are met with abroad. For this purpose there are now being prepared in book form several concise monographs dealing with some of the most important conditions encountered in active service. Every medical man who expects to get into the medical game abroad —and certainly no one should miss it—should equip himself as far as possible beforehand with a working knowledge of the problems he will meet, for as soon as he reaches the War Zone such information is invaluable.

DR. E. L. TUOHY (closing the discussion): I am sure the absence of discussion on trench fever, Dr. Richards, is simply and solely because you presented it so well that nobody could add much to it, and none of us have had any experience with it. Contrarywise, we have all had a great deal to do with this so-called "irritable heart." Verily, one must "watch his step" in presenting a subject such as I have here today in the presence of so many real authorities.

I would not wish to give Dr. Plummer the idea that I consider these cases presenting "irritable" heart, either with or without goiter, or a full neck, are in any way due to hyperthyroidism. It would seem that the two conditions can be rather well differentiated. When these men are quiet and free from emotional stress, their hearts act as normal as anyone's. It is only under the influence of emotion and exertion, or the two in conjunction, that the signs appear.

There are a few capital mistakes made by the average practitioner: In life insurance examinations particularly, many people are erroneously judged on the basis of cardiac murmurs; functional tests are not properly appreciated; hyperthryoidism is apt to be over-diagnosed.

The difficulty with us in the beginning of the work, when the cases were referred to us by the line officers, was that they brought in all the cardio-respiratory and others without clinical significance, and many of the softer diastolic murmurs indicative of aortic insufficiency and mitral stenosis were overlooked. One must be careful in the matter of mitral stenosis not to confuse a short thrill at the apex in systole with a true presystolic thrill. The former has no significance.

The teaching in our medical schools is partly responsible for the undue prominence given to murmurs, their character, intensity and conduction. Many points arise, which of course cannot be discussed with value in an incomplete survey such as this. For example, in an individual with persistent tachycardia, with loud murmurs over the heart, whom you put to bed with rest and digitalis, and in whom you find no change even in a relatively short time, be on the lookout for hyperthyroidism.

The blood pressure is undoubtedly important. Practically all these asthenic individuals have a low blood pressure, but what is more important, a low pulse pressure. I think the general tendency for hyperthyroid cases is to show an elevation of the blood pressure. Is that not true, Dr. Plummer?

DR. PLUMMER: Hyperthyroidism is increased metabolism, and that means more work, and there is consequently a higher blood and pulse pressure.

DR. TUOHY (continuing): You may ask why an individual with a true mitral insufficiency of rheumatic origin shows an enlarged heart, whereas these cases with a much faster pulse on exertion do not show it. The difference is marked, and carries a subtle point: a well compensated case of either mitral stenosis or insufficiency under exercise will frequently show no great advance in the pulse rate from the recumbent rate to that after exercise. If a considerable increase does take place, very commonly the heart will beat rapidly on again resuming the recumbent position only for a relatively few beats, when there will be a sharp contrast and the beat will, again, approximate that which obtained before the exercise. The chief reason for taking the pulse in the recumbent position before exercise is seen in the true irritable heart, because a man with the irritable heart in the standing

position will often have quite a high rate, and there will not be the difference on exercise which really occurs when the test is properly done. Then, again, the return to normal is slow, and there will not be the quick transition between the advanced rate and that which obtained before the exercise, as contrasted with a true organic lesion. Most hypertrophied hearts have previously dilated during periods of incompetency.

It would require a lot of further discussion and evidence to satisfy me on the matter of the source of these so-called accidental or murmurs without significance. I know they are variously ascribed to the myocardium, the viscosity of the blood, etc. Most of the army doctors I came in contact with were greatly confused on this point, and usually refused to accept a diagnosis which did not tell them why an individual had a murmur. If a systolic murmur at the apex was not due to mitral insufficiency, what was it due to?

In life insurance examinations and in the examination of people in civil life, I am satisfied that we start a lot of them off wrong by diagnosing a heart condition which is not a heart condition at all. The individual who is congenitally asthenic, who has low muscle tone and nerve tone and everything else, goes to a doctor on account of pain over the chest, and that doctor says, "Now, your trouble is in your heart"; and forever afterwards he has that planted firmly in his mind, and hence the name neuro-circulatory asthenia.

"Irritable heart" is not a good term, because if a man is being invalided home on account of that he carries that and cherishes it, and he will go to one doctor after another until he finds someone who will treat him for his heart. The difficulty with the term "effort syndrome" is that it is not effort alone but excitement that produces it. These individuals fifteen-sixteenths of the time are perfectly normal. It is emotion and exertion that most of all tend to bring out pain in the chest, giddiness, sweating, breathlessness and the characteristic pulse. We must give that something a name, but it mustn't have anything indicative of the heart in it, because in my opinion they do not need cardiac therapy.

Whether these hearts actually dilate under exercise or not is a mooted question: I am inclined to believe they do, but I doubt whether it is a real cardiac dilatation, but rather an overfilling of the loosely toned up heart muscle, and if you should examine these men day after day and find that the heart width varied from time to time you should not be surprised.

Dr. Greene is right. We have no right to put up any set figure as the normal for a heart width any more than we have for the length or width of a man's foot or arm; that is a problem for every individual or rather his ancestors to decide upon for him. Think of these irritable hearts in your routine work; do not think of them as a soldier proposition alone. You will find it in many women, in many so-called "neurasthenics," and they are going to be at their best when everything about them is good. At other times they are unfavorably influenced by loss of sleep or any operative procedure which an enterprising surgeon may negotiate with them, and by anything which interferes with their economic status or with their happiness in life.

PROSTATIC CALCULI.*

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A review of the records of the Mayo Clinic shows that from January, 1910, to July, 1918, 3,180 patients were examined in whom symptoms were being produced by a pathologic lesion in the prostate gland. Of this number, 1,825, or considerably more than one-half, were not operated on, and in the remaining 1,355 a partial or complete prostatectomy was performed. Of the non-operated cases, some were inoperable because of too extensive malignancy, while in others there were contra-indications to operation because of other complications and general conditions. A considerable number of the patients still come for treatment when the prostate has ceased to be the important consideration, and at a time when the relief of the urinary symptoms would be of no avail. Eleven hundred and seventy-one of the operations were prostatectomies performed for urinary obstruction caused by benign hypertrophy; 118 were for carcinoma, and 14 were for tuberculosis. Included in this group of 1,171 cases are all of those in which a true hypertrophy existed and also those in which there was a large or small degree of hypertrophy in conjunction with the prostatitis. In most of the cases of simple prostatitis the patients responded fairly well to conservative treatment, but if hypertrophy was present so as to interfere with the emptying of the bladder, it was necessary to operate. At times prostatitis apparently occurs in a special form, in that as a result of this type of inflammation stones are formed and deposited in the substance of the gland. It is to this type of prostatitis and the formation of these calculi that I wish to call attention, and also to contrast the condition with one in which stones that are not true prostatic stones become lodged in the prostatic region. In this same period, eight and one-half years, we have seen and treated, or advised treatment in, 20 cases of prostatitis in which true prostatic calculi were present, and also 11 cases in which it was necessary to operate for the removal of false prostatic stone. In most instances the false stones were removed

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by intra-urethral methods. These cases will not be referred to in this paper.

The occurrence of prostatic calculi is rare as compared with the occurrence of calculi in other parts of the urinary system. Because of the fact that in a considerable percentage of cases the symptoms are not directly owing to the stone and also that the occurrence of the calculi is not suspected and not determined, in many instances the condition is overlooked.

The literature on this subject is made up largely of reports of single cases, although within the last year Kretchmer has collected in all, including his own, one hundred and seventy-three cases. By some specialists, such conditions are considered to be so rare as to have no clinical importance, but those who have given the subject the most thought maintain that while the condition is rare, it is frequently not recognized, which is inexcusable at the present time. When the condition is diagnosed, it can be completely remedied by the proper measures.

Cases of prostatic calculi may be divided into three distinct groups. In two of these groups are cases of true prostate stones as they are formed immediately within the substance of the gland; in the third group the stones are formed elsewhere, usually in the kidney, sometimes in the bladder, possibly in a diverticulum of the urethra, and from there are passed into the prostatic urethra. These are known as false prostatic stones. In Group 1 we placed the cases of true prostatic calculi in which the stones are the result of peculiar forms of prostatitis. There may be one or a number of stones formed at the same time. They evidently arise from the acini or ducts of the gland, and while they are usually small, they may attain to considerable size. These calculi have the concretion and sediment of the prostate gland as a nucleus, and this is usually covered by layers of phosphates. There may be some urates as well in the formation, but the nucleus is considered the distinguishing feature. Examination of the nucleus for prostatic material will definitely determine whether or not the stones were formed within the prostate gland. Regarding the formation of such stones, Lund says that hard, microscopic bodies called corpora amylacea form in the prostate at any age. They consist of sediment from the prostatic secretion, and at times become the nucleus for stone formation. Mineral salts, chiefly phosphate of lime, the triple phosphates, and bicarbonate of lime make up the outer coat. The presence of stones in the gland, and also the presence of inflammation in the gland, cause considerable absorption and destruction of gland tissue so that it is usually but a honey-combed formation with calculi projecting from the different compartments. Often there are also multiple abscesses. Unquestionably, the prostatitis is the important feature and stone formation is probably secondary. While the stones are generally distributed throughout the gland, they may occur in isolated pockets outside the gland proper, and some cases are reported in which the stones were located in pockets in front of the rectum and were removed by incision into the wall of the rectum.

The symptoms are those of a severe prostatitis and often the patient is treated for the inflammation, unaware of the fact that stones exist. If the stones project into the urethra, there will usually be urinary obstruction. In some of the cases, stones have passed through the urethra, and sometimes there is a history of hematuria, though these features are not at all diagnostic. One case is mentioned by Lynn Thomas in which the patient passed one hundred and one stones. Pain is prevalent and is usually severe and of the same character as that of ordinary prostatitis, except that it is apt to be more severe. There is much tenderness throughout the perineum and especially on rectal palpation of the prostate, even when stones cannot be felt. The diagnostic characteristics lie in the character of the gland on rectal palpation and in the shadows shown in X-ray examinations of this region. Frequently the condition can be definitely diagnosed by palpation, as the stones may be felt and there is a sense of crepitation on pressure. If the stones are well buried in the gland substance or are lying in the prostatic urethra, they may not be felt. Practically all such stones will cast shadows on X-ray examination so that the diagnosis is very accurate from this method. It is important that an X-ray examination should be made in all cases of protracted or uncertain prostatitis.

In Group 2 we have classified those cases in which the calculi, in all probability, have their origin in the acini and ducts, the same as in Group 1, but instead of being associated with an inflammation in the gland, there is an associated hypertrophy. In these cases the hypertrophy is probably the essential pathology and is the cause of all or nearly all of the symptoms. Often there is nothing to call attention to the stones until the hypertrophied process is enucleated from the gland. The stones usually occur in the form of sand, and while this may be generally distributed through the hypertrophied tissue, more often the most of it seems to be between the hypertrophy and the capsule. Such stones rarely attain to any considerable size, and in all probability are not in themselves responsible for symptoms, although they should be taken into consideration when present with the hypertrophy. They are usually numerous and have the same formation as the larger stones. Sometimes this sandy material may be felt on rectal examination, and sometimes the small stony particles are grouped together so that they cast a shadow on X-ray examination.

Special mention should be made of the differential diagnosis between prostatitis, hypertrophy with stone formation, and carcinoma of the prostate. Sometimes the differentiation is quite difficult in that the hard nodular prostatic carcinoma presents much the same sense of feeling as the stones. In such cases the cystoscopic examination may be very helpful in settling the diagnosis, as in the event of prostatitis it reveals the dilated prostatic ducts and often the stones will be seen projecting from them. Tuberculosis of the prostate may at times simulate prostatitis with stones, but more often the differentiation is not difficult. An X-ray examination may be necessary in order to differentiate the conditions and it is essential that the exposure should be made low enough to take in the pubic symphysis.

In Group 3 are the cases of false prostatic calculi in which the stone is always found in the prostate, usually in the prostatic urethra, but is not a true prostatic stone. While it is not always possible clinically to distinguish this condition, nevertheless the early history is frequently suggestive. The stones usually originate in the kidney, bladder or diverticula of the urethra, and in many instances there is a history of former renal colic during the time the stone passed, or if the stone has been in the bladder, the symptoms produced by the irritation there will suggest the presence of a stone. The stones pass from the bladder into the prostatic urethra and become lodged there. The symptoms at that time are great pain and urinary obstruction. The stone can usually be felt by sound or cystoscope. Whether the stone is a true prostatic calculus or a false one often cannot be determined until it is removed and examined. The stone which forms in the kidney is largely a urate formation and can readily be distinguished from a prostatic calculus. The X-ray will disclose the presence and location of these false prostatic stones, which may become very firmly lodged in the tissues of the prostatic urethra and require considerable effort to remove them. In many instances it will be necessary to accomplish this by an open operation, and great care must be exercised to preserve the bladder sphincter. In several instances in our series, it has been difficult to remove these stones without producing considerable trauma to the surrounding tissues but in a number we were able to remove the stones lodged in the urethra very easily with urethral instruments, and of course this should always be tried first.

The treatment of all types of prostatic calculi is to remove the stones and remedy the accompanying condition. In cases of true prostatic calculi in which there is usually a severe prostatitis, I believe that treatment should be radical. In some instances the condition can be relieved by massage and irrigation, the stones being forced into the urethra and washed out. However, continuing this treatment over any length of time is not justifiable and if the stones are not easily removed an open operation is indicated. Some surgeons have advised, as an operative procedure in these cases, a perineal prostatectomy, and scraping out the stones and draining the infected prostate. This method of procedure may be satisfactory in some cases, but it appears, from our experience, that under ordinary circumstances it is much preferable to do a transvesical operation. I believe that in this way we are more

certain to preserve the bladder sphincters intact, and also in many of the cases the prostate will be so extensively infected that the greater part of it should be removed to insure a complete cure and to prevent a return of symptoms. In many instances the prostate is so completely destroyed that it must have lost all its function; it is of no service, and may make trouble in the future. If the inflammation is not extensive, stones may be removed easier and with less danger of other difficulties by transvesical operation than through a perineal incision. It is not necessary to operate especially to remove the sandy material which is always found in conjunction with some hypertrophy of the gland, but when this condition complicates a hypertrophy it is well to be careful to remove all of the sandy material from the prostatic capsule. This can be done easily after the enlargement has been enucleated. Where false prostatic calculi pass down the urethra and can be removed by the cystoscope or other urethral instruments, this should be done, but if they are firmly wedged into the urethra, it will be best to remove them by transvesical operation.

Prostatic calculi are in reality complications arising in cases of prostatitis, hypertrophy of the prostate, and kidney and bladder stone. While they are rare, they are common enough, all cases considered, to command considerable attention. By bearing in mind that calculi may complicate any one of these conditions, that with the present methods of examination they may be recognized, and furthermore that the treatment of the condition is generally entirely satisfactory, we should be able to add a great deal to the relief of patients suffering from prostatic calculi.

Technic of Clinical Data on the 20 Cases of True Prostatic Stones.

Patients: 12 operated on, 8 not operated on. Youngest 34 years; oldest 76 years; average, 57 years.

Symptoms: 4 weeks shortest duration; 37 years longest duration; 15 years average duration; 2 had no symptoms.

X-ray: Positive in 15; negative in 1; questionable in 1, and not made in 3.

Stones: Palpable per rectum in 16; crepitation per rectum in 6.

Number of stones: 1 in one case; 3 in one case; many in 18 cases.

Size and location of stones: 1 case, a solitary stone, 2 by 3 cm. in the substance of the gland; 4 cases, medium size stones in the substance of the gland; 9 cases, many small stones in the substance of the gland; 1 case, one large, and many small stones in the substance of the gland; 1 case, many small stones in a pocket of the left lobe; 2 cases, sand; 2 cases, no record.

Condition of gland: 8 cases, adeno-fibromatous hypertrophy; 8 cases, chronic prostatitis; 2 cases, hypertrophy and chronic prostatitis; 1 case, acute prostatitis; 1 case, normal.

Previous Neisserian infection: 8 cases, positive; 10 cases denied; 2 cases not recorded.

Previous operations or diseases other than Neisserian infection, influencing the condition: 2 cases, periurethral abscess (cause unknown, 1; trauma, 1); 2 cases, history of renal colic, stone in the prostate but not in the kidney; 5 cases, stricture (Neisserian infection, 4; trauma, 1; urethrotomy, 2; sound, 2); 1 case, renal stones (nephrectomy); 1 case prostate stone (prostatotomy), right castration (cause unknown); 1 case, Raynauds' disease; 8 cases, no operation.

Genito-urinary complications (other than prostatic): 8 cases, none; 2 cases, bladder stone; 1 case, bladder stone and diverticulum of bladder; 1 case, perineal abscess and fistula and stone in the right kidney—infection of the left kidney; 2 cases, traumatic stricture and fistula; 5 cases, stricture; 1 case, prostatic abscess and post operative sinuses.

Urinalysis: 19 cases, acid; 1 case, alkaline; 9 cases, red blood cells; 19 cases, pus; 1 case, negative.

Symptoms: 13 cases, pain; 13 cases, frequency; 13 cases, difficulty; 4 cases, hematuria; 3 cases, stones passed (1 case, 26 stones; 1 case, 6 stones); 2 cases, epididymitis; 4 cases, incontinence; 9 cases, residual (not tested, 7); 2 cases, no symptoms. In some cases urgency and burning.

Operation: 1 case, perineal prostatotomy; 1 case, suprapubic prostatotomy; 8 cases, suprapubic prostatectomy (complete); 2 cases, suprapubic prostatectomy (partial).

The Clinical Data in 11 Cases of False Prostatic Stones in Which Operation Was Done.

Cases: 11; youngest 16 years; oldest 70 years; average, 44 years.

Duration of symptoms: 5 months shortest duration; 18 years longest duration; 7 years average duration.

X-ray: Positive in 6; negative in 1; not made in 4.

Stones: Palpable per rectum in 6; indeterminate in 1; not recorded in 4; crepitation per rectum in none.

Number of stones: Solitary stone in 9 cases; multiple in 2.

Size and location of stones: 1 case, one stone in prostatic urethra; 1 case, multiple perineal fistulas and stone in prostatic urethra above stricture; 1 case, one phosphatic stone, medium size, in a pocket in posterior urethra; 1 case, one large sharp stone, mucous membrane not lacerated, prostate flattened out by stone; 1 case, one kidney stone wedged in prostatic urethra after fulguration of left meatus for its removal, removal through cystoscope; 1 case, one large irregular stone in prostatic urethra; 1 case, one stone one-half inch in diameter, rough, irregular, impacted in sacculated urethra; 1 case, many phosphatic stones and necrosis, prostatic urethra packed with stony material; 1 case, dilated prostrate full of stones, impermeable stricture; 1 case, one large irregular stone, urethra dilated to size of bladder; 1 case, one large, irregular, pear-shaped stone, large dilatation of urethra above stricture.

Previous Neisserian infection: 4 cases, positive; 3 cases, denied; 4 cases not recorded.

Previous operations or diseases other than Neisserian infection, influencing the condition: 1 case, perineal prostatectomy; 1 case, suprapubic prostatectomy; 1 case, perineal exploration; 1 case, stricture of urethra; 1 case, stricture and bladder stones (operated); 1 case, large bladder stone (operated); 1 case, cystitis; 1 case, ruptured bladder; 1 case, ruptured urethra; 1 case, left kidney colic and later bladder irritation; 1 case, negative.

Present genito-urinary complications: 3 cases, negative; 1 case, multiple bladder stones; 1 case, contracted bladder; 1 case, branched stone and pyonephrosis of left kidney; 1 case, cystitis and pyelonephritis; 1 case, necrotic fistula, fractured pelvis, bladder stones and pelvic abscess; 1 case, perineal fistula and stricture; 1 case, anterior stricture; 1 case, stricture and left kidney stone.

Urinalysis: 6 cases, acid; 4 cases, alkaline; 1 case not reported; 7 cases, red blood cells; 10 cases, pus; 1 case not reported.

Symptoms: 11 cases, pain; 11 cases, frequency; 11 cases, difficulty; 5 cases, hematuria; 5 cases, passing stones; 2 cases, incontinence; 1 case, residual; 3 cases, not tested.

Operation: 5 cases, suprapubic cystotomy; 3 cases, perineal section; 1 case, suprapubic cystotomy and urethral dilatation; 2 cases, stone removed through cystoscope.

Probable origin of stone from history and pathology: 6 cases, bladder or dilated urethra; 2 cases, bladder; 3 cases, left kidney.

REFERENCES

1. Kretschmer, H. L.: True prostatic calculi. Surg. Gynec. and Obst., 1918, xxvi, 70-76.

2. Lund, F. B.: Prostatic concretions and calculi. Boston Med. and Surg. Jour., 1911, clxv, 170-172.

3. Thomas, J. L.: Prostatic calculi: Three cases illustrating a new method for their successful removal by the combined suprapubic and perineal routes. Am. Jour. Urolog., 1909, v, 224-228; also in Lancet, 1909, i, 1453-1454.

DISCUSSION

DR. F. A. DUNSMOOR, Minneapolis: After such an enormous experience as that related by the essayist, no one should try to make any other comment than to report additional cases along the same line, although the number may be insignificant as compared with the number of cases mentioned.

While Dr. Judd was reading his paper I recalled the first case I operated on for bladder trouble. The patient was a man by the name of Adams who had fallen from a steeple. He had previously undergone an operation for stone in the bladder by the crushing method. I presume this had something to do with the type of cases Dr. Judd mentioned, namely, the false stone, because I operated on him subsequently, in the year 1878, and found a prostatic stone as the essayist has described.

The last patient I operated on for prostatic stone was a clergyman, and this was also subsequent to an incomplete prostatectomy. This patient was referred to me during the past year. It has never been my fortune, after I have made a diagnosis of prostatic stone with hypertrophy, to have adopted the method which has been so successful with Dr. Judd, namely, operating transvesically. When I have made a diagnosis of prostatic stone I have approached it from the perineal side or, if possible, I try to dislodge the stone and take it out per urethra.

SLIGHT SYMPTOMS IN GALL-BLADDER DISEASE WITH MARKED GROSS PATHOLOGICAL LESIONS.*

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Mankato, Minn.

Surgery reveals such gross pathological anatomy of the gall bladder in many instances where little change is expected that I wish to report a few cases of this character.

It has often been discovered that the gall bladder may contain gall stones (for years probably) which have caused no definite symptoms, such as pain, jaundice, etc., and it would be a fortunate thing if someone would tell us of better methods of diagnosis of gall-bladder diseases which have caused only slight or reflex symptoms. It is not only the large solitary stone which makes the gall bladder its home, without causing much distress, but we may find almost any condition.

Among my recent cases which have come to operation I shall mention five varieties and give a brief history of each:

1. The large solitary stone.
2. The putty-like mould containing soft stones—possibly the initial stage of the monolith.
3. The numerous small smooth stones.
4. The numerous small rough stones.
5. Carcinoma.

The case which well illustrates the first variety was a lady of 57 years of age, who had had stomach trouble for 30 years. She had never had typhoid fever. Had never previously had tenderness over the gall bladder, no vomiting, no severe attacks of pain, but constant stomach distress. She had always been thin and anaemic—one sister and one brother had died of pulmonary tuberculosis, another sister of anaemia—and for years she had been under the care of various physicians trying to get strong and get over her stomach distress. For a few days before presenting herself she had had tenderness over the gall bladder and sharp, shooting pains running to the right shoulder blade. There was a large mass in the right upper abdomen. Urine examination showed a trace of albumen and a few finely granular casts. Functional kidney test gave 95 per cent return of the phenol-sulphonethalein. Haemoglobin, 85 per cent; W. B. C., 13,400.

Stomach examination by fluorscopic rays, showed a practically normal condition. A test meal analysis showed hyper-acidity.

The diagnosis when we saw her was simple because of an acute attack with typical symptoms. But previously she had been prescribed for many times and she had no suspicion of disease of her gall bladder.

Operation revealed a large single stone contained in a large, thick gall bladder. Patient was entirely relieved of old stomach symptoms by cholecystectomy.

Case 2. This patient was a robust man of 38 years, who at 31 years had had one night of pain, and then no distress nor suggestion of abdominal trouble for 7 years, when a second typical attack came on. The gall bladder was about twice normal size and completely filled with a putty-like mould containing several soft stones. Cholecystectomy was performed, and complete uninterrupted recovery occurred, except for slight jaundice for about two weeks after the operation. This man had no indigestion during the interval between attacks. He could eat anything and everything.

Case 3. This was a woman who was tired out all the time. She had had stomach trouble for years in Minnesota. Then went to California hoping to get relief, but was worse and came back this spring. She is married, 33 years of age, never had typhoid fever, but "grippe" three times in past six months. Had had fears of pulmonary tuberculosis for she had some cough and slight pain through the right lung and bad family history. For years she has had to be careful of her diet, had distress about stomach, also tenderness over caecum and sacral backache. She never was jaundiced, never had pain in gall bladder region shooting to shoulder blade, and never any vomiting. Physical examination showed no lung involvement on percussion or auscultation. There was absolutely no abdominal tenderness, but there was a retroverted uterus causing sacral backache. The urine was negative. Stomach analysis: Free H. C. L., 17 per cent; total acidity, 37 per cent; otherwise it was normal. X-ray of lungs showed a shadow of an old in-

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volvement near center of right lung, otherwise they were normal. Stomach rather low. It filled readily and there was good duodenal cap.

On account of backache and history of uneasiness about appendix, an operation to correct retroversion of uterus and to remove appendix was done.

Examination during operation revealed gall bladder full of stones. Cholecystectomy was done, removing a slightly thickened gall bladder containing 411 small and 1 large smooth stones.

It seems strange that these small stones caused no acute attacks of gall bladder colic. Patient now says she can eat anything and everything, whereas before she had to be careful all the time.

Case 4. This case was that of a young telegraph operator and depot agent who came in during an acute attack with typical symptoms of gall bladder disease. For years he had noticed slight pains only when he would lean against his desk. These stones were the small, very rough variety. Why hadn't these caused severe spells?

Case 5. Woman aged 42, who for a year had had occasional heavy feeling in the epigastrium. No sharp pain, no vomiting, bowels regular, backache often, slight tenderness over the epigastrium and along the right costal arch. No colic attacks. Slight loss of weight. Never jaundiced. Exploratory operation advised because of loss of weight, though local symptoms were so indefinite that we doubted gall bladder involvement.

We found inoperable carcinoma, involving the gall bladder and the whole right lobe of the liver, which caused her death in a few weeks.

All five of these cases showed marked pathological changes, and had had gall stones for years probably, yet none had had typical attacks previously except case No. 2 who had had one short attack 7 years ago and had been in excellent health since.

DISCUSSION

DR. WILLIAM R. BAGLEY, Duluth: There is one point I would like to refer to and that is the character of these stones. There seems to be in my experience a peculiar formation which is always found in these cases which have an acute origin, and the specimen in the second case the doctor speaks of exemplifies the putty-like consistency of the stone. I have had at least two cases similar to the second one that he has related. Previously these patients had had attacks of gall-stone colic which were quite typical, and then one of them, at least after a period of five years, has had no typical gall-stone colic. He has had more or less digestive disturbance and gas, recently he was taken with typical attacks of gall-stone colic which subsided and finally developed into a cholecystitis. Upon operation we found numerous stones agglutinated by this peculiar yellowish putty-like content—precipitated bile.

I have a specimen in my pocket from a woman confined about six weeks ago. She had her first attack of gall-stone colic about three weeks ago, and since that time has had practically continuous attacks. Upon operation I found a very much inflamed gall-bladder, and fifty or sixty small mottled yellowish white stones. These stones were soft, giving evidence of rather rapid formation, and I think we will find that some special kind of the bacterial infection has a specific precipitant action upon the bile which produces this particular character of stones.

DR. E. Z. WANOUS, Minneapolis: The essayist has brought out one point well worth remembering, and that is the fact that any symptom that is referable to the stomach must of necessity be a reflex from some other part of the abdomen. Unquestionably every one of his cases had stomach symptoms when they presented themselves, and this is a point that is well worth remembering. An irritable appendix, gall-stones, any irritation in the abdominal cavity, will frequently give you symptoms referable to the stomach.

The second point I want to mention is the fact that it is not the foregin body in the gall-bladder that produces the pain; it is the pressure back of the foreign body, and in many of these cases we have no pain as we know when we go into the abdomen for other pathology. We find gall-stones without any symptoms. When the pressure is established, then we have our symptoms, and in these cases that the doctor reports the probability is that the patients presenting themselves for stomach conditions did not reach the stage where the pressure was established back of the gall-stones which would give typical gall-stone colic.

THE SURGICAL IMPORTANCE OF ABDOMINAL ADHESIONS.*

WILLIAM R. BAGLEY, M. D.,
Duluth, Minn.

It is quite possible that the influence exerted upon the health and comfort of the individual by abdominal adhesions is overestimated.

It is possible that some surgeons are right in their contention that adhesions are overestimated and should be more largely ignored.

It is most disconcerting, however, to perform a very successful operation and have your pa-

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tient persist in a new line of symptoms in the same locality. Taking for granted that your original diagnosis was correct, what gives the new pains? Are your patients with these new pains all neurasthenics? Have you ever had to interrupt a previously uneventful operative recovery by an operation for acute intestinal obstruction due to adhesions? Is it unlikely that there are not fractions of partial obstructions which give symptoms? How many of your patients give a history of abdominal inflammation following which they have never felt normal?

It is quite possible that adhesions (not necessarily in the acutely sensitive regions) which in any way retard function or bring abdominal tension on mesenteric vessels and nerves are exerting a constant nervous influence which as surely undermines nervous stability as the proverbial drop of water which wears away the stone.

We recognize that many adhesions have originated as a protective measure. They wall off such acute infective processes as appendiceal abscess, gastric ulcer, pelvic infection, tubercular foci, thus saving the individual's life, but after so doing, with the original process dead, they are of no benefit.

X-ray observations will show a sluggish bowel action in the immediate vicinity of adhesions and they can be considered a factor in some cases of constipation.

The inhibiting influence upon peristalsis of an irritable appendix is recognized, but cecal adhesions as the result of former acute peritonitis in this region add much to the loss of efficient contraction and from an operative standpoint, unless actual resection is contemplated, may afford little hope of relief, because of the rigidity of bowel due to their great extent.

Pain in this locality after removal of the appendix is most common in those cases that have a cecum with long mesentery and anterior abdominal wall adhesions (generally at the incision point) which tend to limit cecal mobility especially upon exercise. In these cases operation is most satisfactory.

Another post-operative finding is the ileocecal kind (Lane's) which was possibly overlooked at an earlier operation or was established in the inflammatory process incident to operation.

A recent case of mine operated upon for appendicitis two years ago, with dragging, crampy, partially obstructive pains persisting ever since the operation, showed band-like adhesions from the incision site to a deep-pouched cecum with ilium closely adherent from valve to bottom of sac, a distance of four inches. The ilium then folded back upon itself for an equal distance being firmly united from mesentery to center of circumference. Relief from symptoms was immediate. Adhesions attached to the appendix itself constricting its lumen, interfering with drainage, or making the appendix the anchor of a loaded cecum, give symptoms which even the laity recognize and for which they demand operation.

Perigastric adhesions may cause pain especially if associated with active ulcer and can be a factor associated with ulcer near the pyloris in stomach dilatation.

Adhesions with healed ulcers of the stomach or duodenum produce few symptoms unless there is a tendency to obstruction. Adhesions to the gall-bladder, even though it has no active disease process, will give discomfort and demand attention if they render the gall-bladder an anchor point from which is exerted a pull.

Many cases of cholecystotomy are rendered most uncomfortable upon any exercise by adhesions between abdominal incision and gall-bladder and the digestive disturbances often equal chronic cholecystitis. Removal of the gall-bladder will give these people relief. Adhesions following inflammatory troubles and operations which involve this region must be considered as a cause of jaundice. Compression or kinking of the common duct by adhesions is not an unheard of condition.

In children and young adults the most common cause of intestinal obstruction is from adhesions due to appendicitis, tubercular peritonitis and tubercular mesenteric glands. Add to this the adhesions resulting from inflammatory pelvic troubles in women and we have the source of the great percentage of obstruction.

It is in the pelvis and particularly the female pelvis that adhesions play their great role.

The pelvis is the catch basin for all infection higher up as well as that developed locally. Infected contents from ruptured gastric and duodenal ulcers, gall-bladders and appendices grav-

itate to this low point and exert their greatest action.

The surprising thing is that abdominal contents ever do escape from the gluey twist in which they are so frequently seen.

In a recent case of old healed tubercular peritonitis discovered incident to a pelvic condition also tubercular, practically the whole small intestine could be picked up by one hand and still there had been no intestinal colic or obstructive symptoms since 19 years of age. The history would register this as having existed for about twenty-seven years. From 15 to 18 years of age she had been pronounced tubercular and had a great deal of abdominal pain. Menstruation had always been painful.

Pelvic adhesions frequently distort the uterine position so that obstructive dysmenorrhea frequently results. Much of the pelvic pain following inflammation of this region is undoubtedly due to the tension in the organs caused by the disturbed circulation from the binding pressure of adhesions. Stricture of the uterine end of the Fallopian tubes and adhesions closing the fimbria form pyo- and hydrosalpinx.

The closure of the Fallopian tubes after a natural cure of tubercular peritonitis or one where simple drainage was done, results some time later, probably in a large per cent. of the cases, in accumulation of the typical tubercular deposits which increase the size of the tubes so that they are recognized and surgically treated.

Many ovarian cysts are entirely due to disturbed circulation and the inability of one time normal Graafian follicles to rupture and empty their contents owing to adherent tissue which resulted from some former or present inflammatory condition. Inflammatory thickening of the ovarian capsule will result in the same condition.

The elimination of adhesions following operative work should be an earnest consideration of the surgeon.

To accomplish this:

First make as small an incision as can be worked through with accuracy.

Get more of your sutures covered especially those not of plain gut.

Utilize especially the sigmoid and omentum in covering all raw surfaces, not that these tissues are immune to the disadvantages of adhesions, but that they are less so than the other abdominal contents. Keep the small intestines as remote as possible from the field of operation. In hysterectomies make a long flap of the peritoneum on the anterior surface of the uterus and cover all raw surfaces.

Utilize and encourage a frequent change of position in bed, not overlooking the raising the foot of the bed in pelvic cases where permissible.

I believe the abdominal dressing can have an important bearing upon adhesions. The primary object of your abdominal dressing is to re-enforce your sutures and protect the incision area from outside contamination. I believe in firm pressure at this point, but as frequently dressed the whole abdominal pressure is equalized, and shifting of abdominal contents, interference with which is a detriment in most of our cases.

It is not my intention to state that all subjective symptoms that suggest the possibility of adhesions should be operated upon, but given a patient with persistent localized symptoms, especially with a preceding history of inflammation or operation, and they are entitled to the doubt and an operation.

Failure to take every precaution against the formation of adhesions lays you open to the criticism of a one-time practitioner who solemnly informed the grieving friends that the surgeon had not put the bowels back right.

DISCUSSION

DR. THOMAS E. WILLIAMS, Eau Claire, Wis.: Although I am not now a member of the Minnesota State Medical Association, I formerly was and feel quite at home, and this question of abdominal adhesions was very thoroughly threshed out in June in Chicago. I think any of us who have seen Dr. Bagley work would have great respect for the manner in which he handles the abdominal contents. This subject was thoroughly discussed in Chicago and important points in connection with postoperative adhesions were brought out.

I remember in my hospital days in St. Paul of one case in particular that was operated on seven times, and I think I witnessed seven of these operations. They were performed by different men, and the diagnosis was one of adhesions before operation was undertaken. In those days postoperative adhesions were said to be due to a great deal of trauma, and especially adhesions of the omentum. When a man opened the abdomen of a patient and found the great omentum adherent, he smiled and thought he had found the cause of the woman's trouble. This woman who had her abdomen opened so many times had a mania for operations, and

she always found receptive physicians who were anxious to open her belly. Every surgeon who opened her abdomen and found adhesions thought they were the cause of her trouble. But the woman's trouble was in her head.

There was one point that Dr. Bagley brought out with reference to making use of the great omentum to create adhesions. Dr. Charles Mayo brought out the point at one time that it was never adhesions of the great omentum to any organ that caused symptoms, and that we should lay especial stress on not removing the great omentum even though it was adherent to things; that we should leave all the great omentum where we possibly can because it is the greatest source of protection that the abdomen has. Dr. Mayo stated that the anti-bacterial property was in almost direct proportion to the size of the omentum in many cases, and I would like to lay special stress on the point brought out of utilizing the great omentum to cover up adhesions of the parietal peritoneum, especially those in the vicinity of Lane's kink, and I feel that if the omentum is utilized you will get some wonderful results.

DR. W. A. COVENTRY, Duluth: I rather think this paper might be better named, judging from the doctor's discussion, "The Prevention of Adhesions," rather than "The Surgical Importance of Abdominal Adhesions."

I think practically every man today who attempts to do abdominal surgery or claims to be an abdominal surgeon, tries to prevent abdominal adhesions. I also believe that any one who has done and is doing considerable abdominal surgery does not take much stock in, or possibly none at all, operating for abdominal adhesions unless they are causing absolute symptoms of real grief. These patients who come to us have usually been operated on before and have tenderness over the scar and complain of considerable intestinal disturbance, constipation, and so on, and my own experience has been that we do not get far by operating for these adhesions. I went through that eight or ten years ago, and in later years I have fought shy of them because the results were very unsatisfactory. Of course, if you have a case of obstruction of the bowels or other similar conditions from adhesions, it is a different proposition. There you are operating for obstruction, and not for adhesions. To operate for abdominal adhesions per se is in my notion entirely wrong.

DR. BAGLEY (closing): I have not much more to add to what I have already said in the paper.

With regard to Dr. Williams' point of what was stated by Dr. Charles Mayo in Chicago, we are choosing the lesser of two possible evils when we select the omentum, sigmoid or cecum in covering up tissue, thus preventing primarily the attachment of the small intestines which give us our greatest grief in the abdominal adhesions that form. Adhesions from the omentum, from the pelvic organs, especially preventing the escape of ovarian content, unquestionably predispose to future trouble from these ovaries and always make painful menstrual periods.

In regard to the point made by Dr. Coventry, I think we are inclined to condemn many patients as nervous, neurasthenics, who really have an abdominal condition not always due to adhesions, but because they are nervous we place them in the general category of operative fiends who want something done and are always complaining. We should look more and more upon nervousness or neurasthenia as a symptom rather than an actual pathological condition, and be sure, after studying our patient carefully, that we have not misjudged her and give her the benefit of a doubt by operating if in our judgment she is entitled to one, and if a man has had a reasonable amount of experience and has studied his individual case he will not very often miss the mark.

I have in mind a man of Jewish extraction who had gone the limit. He had been to Rochester. He was unquestionably very nervous, and still his symptoms were of a digestive nature. He did not have a well defined localized pain; it was very general as it so frequently is in some of these cases; he had a little pain everywhere, and still the symptoms were those of digestive disturbance. I was in doubt whether it was due to his knowledge of the matter, but he did have more pain over his appendix than anywhere else. This particular case was not one of adhesion; it was a case of chronic appendicitis and the removal of the appendix relieved the man of all symptoms.

To reiterate: Knowing your patient and making due allowance for nervous stability, I think a conscientious man can go into the abdomen for symptoms which are of a localized nature and are persistent.

THE RELATIONSHIP BETWEEN TONSILLAR INFECTION AND RECURRENT VOMITING.*

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The striking features of typical attacks of recurrent vomiting, their periodicity, the prostration and intoxication accompanying them, no less than the prompt cessation of symptoms and the rapid recovery of the patient have, for twenty years, received much attention from the clinic and the laboratory.

Griffith, in 1900, reported the presence of acetone in the urine of one patient during the attack. This finding was confirmed the next year by Valagussa. Marfan then wrote describing the symptoms of the disease, and its constant association with acetonuria; but considered that the acetone was merely the companion of other toxic and more truly pathogenic substances as yet unknown. Marfan further pointed out that in recurrent vomiting the ace-

*Presented before the Southern Minnesota Medical Association June 25, 1918, Winona, Minn.

PATIENTS OPERATED ON

Number	Age	Age at Onset	Abdominal Pain	Duration days	Frequency	Foci *	Tonsils and Adenoids previously removed.	Tonsils and Adenoids removed	Results
196245	7	Early	0	2-3	15 a yr.	Tonsils 3; adenoids 2	0	+	No answer.
197311	5	Early	0	3-4	3-4 a yr.	Tonsils 3; adenoids 3	0	+	No attacks in year following operation.
200248	7	6	0	1-2	6-10 a yr.	Tonsils 2; adenoids 1	0	+	No answer.
200492	4	2	0	4-5	3 a yr.	Tonsils 3; adenoids 2	0	+	No attacks in 11 mos. following operation.
201571	8	2	+	2-4	5-6 a yr.	Tonsils 3; adenoids 2	0	+	Two attacks lasting 1 day in 10 mos. since operation.
128926	4		0	2	12-15 a yr.	Tonsils 3; adenoids 3	+	+	Much improved in the first year after operation.
138053	5		+	1	12 a yr.	Tonsils 2; adenoids 1		+	Two attacks in 3 yrs. since operation. Attacks accompanied by abdominal pain.
140275	10	5		3-5	4 a yr.	Tonsils 3; adenoids 2		+	No attacks in 3 yrs. since operation.
168613	13	4	0	2	3 a yr.	Tonsils 3; adenoids	0	+	No answer.
170853	4	2	+	1-2	4 a yr.	Tonsils 2; adenoids 2	0	+	Continues to have 4 or 5 attacks a yr.
174799	6	3	0	3 or more	Many	Tonsils 3; dental caries	0	+	No attacks in 18 mos. since operation.
175216	5				2-3 a yr.	Tonsils 2; adenoids 1	0	+	No attacks in 18 mos. since operation.
176002	9	2	0	3-5	4-6 a yr.	Tonsils 3; adenoids 2	0	+	No attacks in 19 mos. since operation.
115185	9	6	0	1-5	8-10 a yr.	Tonsils 4; adenoids 3	0	+	No severe attacks in 4 yrs. after operation.
119817	7	2	0	2-3	12 a yr.	Tonsils 3; adenoids 3 Mother has lues	0	+	No Attacks in 15 mos. following operation.
206609	9	2	0	1	Every wk.	Tonsils 2; organic heart	0	+	3 attacks in 10 mos. following operation.
205075	3		0	2	15-20 a yr.	Tonsils 3; enlarged glands adenoids: pyelocystitis	0	+	No answer
205685	2½		0	1	3-4 a yr.	Tonsils 3 with glands	0	+	No attacks in 10 mos. since operation.
176074	5	16 mos.	0	5-6	4 a yr	Tonsils 3	0	+	No answer.
201575	7		0	4-5	6 a yr.	Tonsils 2; adenoids 2	0	+	No answer.
219441	6	3	0	2-14	Many	Septic tonsils with adenoids	0	+	No attacks in 5 mos. since operation.
64611	5	3	0	1-3	4-20 a yr.	Large tonsils and adenoids. F. has lues	0	+	No attacks in 6 yrs. since operation.
212776	8		0	7	3-4 a yr.	Large septic tonsils and adenoids	0	+	No attacks in 7 mos. since operation.
190162	7	5		2-7	4-5 a yr.	Tonsils 2; pyuria	0	+	No attacks in 1½ yrs. since operation.

PATIENTS NOT OPERATED ON

Number	Age	Age at Onset	Abdominal Pain	Duration days	Frequency	Foci of infection*	Tonsils and adenoids previously removed
158678	6	4		2-3	Many	Tonsils 2; remaining adenoids 1	+
188574	11	Early	+	1-2	10-12 a yr.	Tonsils 2; adenoids 1	0 Appendix removed at 9 yrs.
188876	11	9	+		Many	Tonsils 3; adenoids 1	0
140053	7	3	+	2-3	30-40 a yr.	Tonsils 4; adenoids 3	0
168759	7	3	0	2-5	4-6 a yr.	Tonsils 3; adenoids 2	0
169437	9	7	0	1-2	12-15 a yr.	Tonsil stumps 2; dental caries and adenoids	At 5 years
205876	12				Occasional	Tonsils 2; adenoids 1. Chronic otitis media	0
103245	9	5	0	1-2	4 a yr.	Hereditary lues	+
207117	12	1	0	3-4 wks.	6-8 a yr.	Hereditary lues	+ No improvement.
204142	16	6	+	3-4 da.	4-8 a yr.	Hereditary lues. Non-septic tonsils	Appendectomy; Cholecystostomy; no relief.
94461	3	2		3-4 da.	4 a yr.	Mother has lues	
214110	4		0		Occasional	Large tonsils with adenoids	0
204976	6	5	0	1	Occasional	Tonsils 1; adenoids 1	0
206235	9	Infancy	0	3-5 da.	Every 3-4 wks.	Tonsils 3; adenoids 1; mild chorea	0
210779	3	2	0	Several days	Every few wks.	Tonsils small, slightly septic Colds and sore throat	0
211999	8		0	Few days	Occasional	Small non-septic tonsils and adenoids	0
179002	12	10	0	1 day	1 a wk.	Tonsils 2; adenoids 2	Appendectomy 1 yr. ago. No benefit
204896	11	6	0	2-7 da.	Frequent	No tonsils and adenoids	+ No improvement.
66819	4	3	0	7-14 da.	6 a yr.	Large tonsils. Operative adenoids	0
72682	6	2	+	2-4 da.	4 a yr.	Medium sized tonsils and adenoids Pus and casts in urine	
75439	9	5	0	1	Every 2-3 wk.	Medium sized tonsils, large adenoids	0
82204	9	Infancy	0	1-3	Every 2-3 wk.	Repeated tonsillitis.	0
100302	5	5 mo.	0	2-6 da.	Every 2-3 mo.	Tonsils 2; adenoids 2.	0

*Tonsils and adenoids are arbitrarily graded as to the degree of hypertrophy on a scale of 1, 2, 3, and 4. Tonsils 2, Adenoids 1 represent the findings in the usual child's pharynx. This grading does not measure accurately the pathology present.

tonuria was not due to starvation, as in some instances it was present before the patient had refused food. Howland and Richards concluded that while the presence of acetone bodies could not be considered as owing to carbohydrate starvation, they might well be depended on insufficient combustion of ingested carbohydrates. They formulated the theory that insufficient oxidation processes were in part responsible for the symptoms, and supported this by the finding in the urine during the attack, of increased amounts of partially oxidized substances, neutral sulphur, lactic acid, and uric acid. Sedgwick's finding of large amounts of creatin in the urine of children during the attack may also be explained as indirectly due to diminished oxidation.

That the acetone bodies are not in themselves the cause of the symptoms, was finally and conclusively shown by Mellanby who, in 1911, withdrew carbohydrates from a child subject to recurrent vomiting and produced acetonuria, but did not produce vomiting. Nor are the attacks due to dietary indiscretion, to indigestion or to biliousness in the old sense. The majority of opinion of those having the largest experience with the disorder has been voiced by Marfan and by Abt, each of whom states that diet during the interval has no effect on the occurrence of the attack.

It is difficult to conceive that a metabolism which functions perfectly for a period of months will then suddenly become subverted and turn out incompletely oxidized toxic products, without there being present some cause which was not active during the interval. Sedgwick was the first to lay the responsibility for the attacks of vomiting directly at the door of infection when, in 1912, he reported eight cases in all of which the patients were either entirely cured or much improved by the removal of adenoids or tonsils. He also reviewed the literature to that date, finding evidence of infections, sore throat, arthritis, coryza, epistaxis, etc., in the older reports and studies on recurrent vomiting.

My own experience in Dr. Sedgwick's clinic led me to believe that in most of these cases infection of the lymph adenoid tissues in the nasopharynx was an important etiologic factor, and, after beginning work in the Mayo Clinic, I continued to view these cases as possible results of tonsillar or adenoid infection.

Because of the criticisms aimed at wholesale slaughter of tonsils and adenoids, and in order to satisfy myself of the validity of considering the presence of recurrent vomiting as an indication for the removal of tonsils and adenoids, I have studied the case records of the 47 patients treated in the Mayo Clinic previous to the close of the year 1917, and in whom a diagnosis of recurrent vomiting of childhood had been made. Many of these were severe cases. In most instances the children had been brought to the clinic, often from long distances, in the hope of obtaining relief from the attacks. On the whole the patients would seem to be representative of the typical form of the disease. Their average age on coming to the clinic was about 7 years; the average age at onset was about 3 years. The attacks lasted for from one day to two weeks with an average duration of three or four days; their frequency varied from three or four to twenty or more a year. In eight instances the attacks were associated with abdominal pain, usually dull and indefinite. Appendectomy had been performed in three instances, and appendectomy and cholecystostomy in one, without relief of the symptoms. Septic tonsils, or enlarged infected adenoids or both, were present in 40 of the 47 patients, four of the remaining seven had hereditary lues, 2 of these had had their tonsils and adenoids removed elsewhere without benefit, and one improved under specific treatment. One of the patients with hereditary lues had small non-septic tonsils and adenoids, while the record of the fourth contains no mention of the nasopharynx. Of the remaining three patients, two with mild infrequent attacks had small apparently normal tonsils and adenoids, while the third, a brother of one of the two, had had his tonsils and adenoids cleanly removed elsewhere, without benefit. Both this patient and his sister were of the neurotic type, and had had severe eczema in infancy. The removal of tonsils and adenoids was advised in 32 of these patients. The remainder were sent home with tonic perscriptions, advice as to diet, laxatives and general hygiene. The tonsils and adenoids were removed in twenty-four instances. The basis for this paper is found in the results of operation in these cases, as developed by the

replies to the following questionaire mailed to the parents of each patient:

1. Has your child continued to have attacks of vomiting since the tonsils and adenoids were removed here?

2. How many vomiting attacks has your child had since the tonsils and adenoids were removed?

3. Have they been as severe as before the operation?

4. How long do the attacks last at present?

5. Are the vomiting attacks accompanied by severe abdominal pain?

No reply was received in six instances. The parents of one child who, at operation two years previously, was four years old and having annually about four attacks of from one to two days duration, report that he now has about five attacks annually, each about three or four days long and not accompanied by abdominal pain. Of the remaining seventeen patients, one who was having five or six, two to four day attacks each year, reports two attacks of one day each, in the ten months since the operation. One, one year after operation, simply reports that the child is much improved. Another who was having monthly attacks has had only three short ones, with an average duration of fifteen hours, in the three years since operation. These attacks have been accompanied by abdominal pain. One patient reports a few severe attacks shortly after the operation, with two attacks, each lasting only a half day in the last year. This patient was operated on four years previously at the age of 9 years, when she was having about ten, one to five day attacks each year. One more patient, a 9 year old boy who, one year ago, was having more than two attacks a month, has had three in the ten months since operation, and these have been mild and have lasted less than one day. The remaining twelve patients report that they have had no further attacks.

To summarize the evidence obtained from these records of 47 cases of recurrent vomiting, we find that in 40 there was evidence of tonsillar or adenoid disease. In 6 of the 24 patients whose tonsils and adenoids were removed, no further information could be secured. One of the remaining 18 patients is unimproved. Five are very much improved, and 12 have had no attacks since operation, this period varying from seven months to six years.

REFERENCES.

1. Abt, I. A.: Discussion of Dr. C. G. Kerley's article, "One hundred and forty-one cases of recurring vomiting in private practice. Am. Jour. Obst., 1914, lxx, 848.
2. Griffith, J. P. C.: Recurrent vomiting in children (cylic vomiting). Am. Jour. Med. Sc., 1900, cxx, 553-567.
3. Howland, J. and Richards, A. N.: Some possible etiological factors in the recurrent vomiting of children. Arch. Pediat., 1907, xxiv, 401-413.
4. Marfan, A. B.: Les Vomissements avec acétonémie. Arch. de méd. d. enfants, 1901, iv, 641-658.
5. Mellanby, E.: A short chemical study of a case of cyclic vomiting, with some remarks on creatinuria and acidosis. Lancet, 1911, ii, 8-12.
6. Sedwick, J. P.: Studies of recurrent or periodical vomiting. Am. Jour. Dis. Child., 1912, iii, 209-215.
7. Valagussa, F.: Contributo allo studio dei vomiti, ciclici nei bambini. Arch. de méd. d. enfants, 1901, iv, 681-682.

DISCUSSION.

DR. E. J. HUENEKENS, Minneapolis: I think Dr. Taylor is to be congratulated on showing so clearly the relationship between recurrent vomiting and foci of infection. But there is one point that ought to be emphasized: there is another element in these cases besides the focus of infection. Practically all of these children are neurotics. We rarely or never see these cases in dispensary practice. They are all in the so-called leisure class. I imagine the cases where we do not get results from the removal of the tonsils are the cases in which the neurotic element predominated. After the tonsils and adenoids have been removed treatment does not end. We must treat the neurotic part. We must remove these patients from their former environment, from their neurotic parents, and see that they get normal play and are removed from abnormal atmospheres. We should see that they play simple childish games with other children, games suited to their age. We should remove them from their precocious surroundings.

There is another element to be borne in mind, and that is, these neurotic children with severe symptoms respond to slight defects. One of the things that I have noticed especially with all neurotic children after the removal of the tonsils and adenoids is that there still remain behind marked deformities of the jaw, malocclusions, which are only remedied by orthodontia. The more I see of these cases, the more I have become convinced that there is a big field open to us by orthodontia. It is something we have to develop more than we have in

the past. For the past year I have been associated with an orthodontist in Minneapolis (Dr. Hyde) and have seen many of these cases in neurotic children who did not respond to any other treatment, where no other organic lesion could be found, and these children were materially benefited in their nervous symptoms by having their jaws taken care of by proper orthodontic treatment.

DR. F. W. SCHLUTZ, Minneapolis: I fully endorse what Dr. Taylor has said in regard to the removal of tonsils and adenoids in connection with recurrent vomiting, but I do feel from my experience that the removal of the tonsils and adenoids is not the only factor in these cases. There is a neurotic element which has been referred to by the previous speaker. These attacks occur almost always in individuals of the neurotic type, and I have never seen a case yet where the removal of the tonsils or adenoids alone would give relief of symptoms. I am firmly of the opinion that we must resort to a composite measure, such as strict attention to diet, bearing in mind the possibility of the anaphylactic manifestations to which I called attention in my paper; and removal of the patient to a different environment.

Another experience I have had occasionally is quite interesting, and that is the possibility in these cases of some trouble with the appendix. I have had several cases that have had severe attacks of vomiting extending over a period of years. Some of these patients finally came to operation for trouble in the appendix. I cannot but feel that we must not overlook the connection between a tonsillar infection and appendix trouble, a point brought out by Dr. Rosenow of Rochester.

There is no doubt in my mind that anaphylactic phenomena are a big factor in these cases.

DR. H. A. BEAUDOUX, St. Paul: Mr Chairman:—I would like to know whether the sinuses were investigated in these cases and whether any of them were found diseased. It has been brought out in the last seven or eight years that such cases are found among patients suffering from chronic sinus infection.

In a paper I presented to this society at Owatonna some four years ago, I reported, among other cases of atypical frontal sinusitis, that of a woman forty-five years of age who had been troubled with recurrent nausea and vomiting for twenty years, and after operating and curing a chronic frontal sinusitis, the patient has not suffered from vomiting or nausea.

Another point to which I desire to call your attention is that unless many of the common causes for persistent vomiting are eliminated, the claims made by the esayist for the cause of the vomiting of his patients should, in my opinion, be questionable, for the eye, the ear, the abdominal cavity, including all stomach epigastric and intestinal disturbances, particularly in children, should not be overlooked and attributed to so common an occurence as enlarged tonsils. There are, however, individuals who have a very sensitive pharnyx where the presence of large tonsils and elongated uvulae or diseased adenoids can be responsible for such symptoms.

Our late Governor Johnson's physicians at one time were much puzzled concerning the origin of a prolonged nausea and recurrent vomiting which had existed for some days without any clinical evidence of recurrence of his old appendiceal trouble. I advised removal of his much elongated uvula and his relief was immediate. The condition of the nervous symptoms in these cases has undoubtedly some relation to this reflex condition and may be considered in a way responsible for the reflex act.

Onodi, who several years ago made an extensive study of sinus disease in children, confirmed the clinical experience of many others specializing in this line of work concerning the possibility of sinus disease as a causative factor for recurrent and persistent vomiting. Before we can absolutely blame the tonsil, either as a local irritating agent or from its toxic relation to the general circulation as a whole, we must investigate and diagnose the more common causes of recurrent and persistent vomiting, lest we overlook some lesion of more importance and danger to the patient for the time being than an enlarged pair of tonsils.

DR. C. A. LESTER, Winona: There are several points to be considered in connection with these cases of recurrent vomiting. It has been clearly shown that there is no one thing that causes it. It is like headache and other neurotic symptoms. A man may have headache from flat feet. All of these symptoms do not come from the tonsils. You may remove the tonsils and yet the source of the trouble has not been removed. Again, all of the symptoms from which these patients suffer do not come from the sinuses, from the chemistry of the intestine, or do not come from appendicitis. Some of these cases are due to causes that have not been mentioned. The most remarkable instance of this kind I have had I will relate briefly, although I have had a few similar cases. The patient was a boy, 12 years of age, who had recurrent vomiting. I do not recall his exact history, but learned that he had had recurrent vomiting ever since he was a small boy. At first, he had recurrent vomiting several times in a year, and then the attacks gradually became more frequent and worse until finally when I saw him he was vomiting daily. Two years previous to the time I saw him it was thought by the consultant in the case that he had appendicitis, but they did not operate. At the time he was brought to me his case was considered one of appendicitis. He was vomiting daily. A surgeon who examined the boy said he did not have appendicitis and suggested that he come to see me to have his eyes examined. He had already lenses applied to his eyes without doing any good. He still continued to vomit. The first thing I looked for (and I have had a number such cases) was up and down deviation of the eyes. If you will take trial prisms and put a three degree prism base up before one eye, or a 3° prism base down, you will not have

it on long before the patient vomits. This boy had 21° of latent hyperphoria, and no wonder he vomited. I put on 7° correction at once, 3½° prisms in each eye, in addition to correcting more or less hyperopia, which was enough to cause some eye strain. Instead of the prism making him sick, as it usually does, that boy has not vomited since. This is the most remarkable case I have seen or heard of. In six months the latent hyperphoria had gone down to 15°; a year and a half later it had gone down to 8°. I reduced the prisms to 5°, and he is still wearing a 5° prism and is perfectly healthy.

This brings up another cause for recurrent vomiting, and in this connection I have observed another thing to which I desire to call attention, although this is not a paper on the eye. I refer to muscle deviation. Recurrent vomiting is a symptom in my experience which accompanies **vertical** deviation of the eye, and there is a lack of concentrative power which accompanies marked **external** deviation. I have the opportunity to examine a good many students, and on asking every one of them this question: "Have you noticed that your concentrative ability in the last year or two in studying a few paragraphs is not as great as it formerly was?" If they have answered yes, they found they would have to read a paragraph four or five times in order to understand it, and that their power of concentration was not as great as formerly, such students always have exophoria. I want to bring this out because I considered it a point of great importance.

DR. W. A. JONES, Minneapolis: It is gratifying to attend a medical meeting and see so many men interested in neurological subjects, and notwithstanding what has been said with reference to the tonsils and adenoids as foci of infection, I am convinced that there are cases reported and many unreported that are due to defects primarily in the nervous system rather than to enlarged tonsils. The reason I think Dr. Taylor did not relieve some of these cases of reflex vomiting by the removal of the tonsils and adenoids is because the primal factors did not receive proper attention or he did not get to the fundamental facts. If the families of these patients were either treated or exterminated we would get away from this trouble (Laughter), but having come into the world poorly constructed and with a bad system of some sort it is no wonder that these patients have developed other defects that interfere with the proper working of the various glands of the body.

I have seen a great many cases of reflex vomiting, and I have seen none that have been benefited, except in one or two instances, by surgical intervention or something of that sort. It seems to me, if we follow the history of these people and study the symptoms of which they complain, we will find that they are not subjected to the treatment that they are really entitled to. One important factor in treating these patients is the correction of bad nervous habits. Their tonsils may be removed or adenoids cleared away, and yet the original defect remains. I am not decrying the removal of the tonsils and adenoids, because I believe it is one of the most popular indoor sports we have. (Laughter.) We ought to think more seriously of the investigation of historical facts, time and patience, and not think of the visible signs as the only evidence of disease, defect or disorder. If we do, much needless detail work is done without serviceable results.

DR. W. D. SHELDON, Rochester: I wish to mention a point that has seemed of importance to me after what Dr. Jones has said. It fits in with the facts of an enormous group of people whom we see with migraine. I do not know what migraine is except that it is hereditary. It is met with all through life up to the age of forty-five. There is a history of periodic vomiting with headache, and oftentimes it begins, so far as the history goes, back to the time that these people can remember. I have wondered what percentage of these cases develop into a migraine picture when they become adults. I have not yet heard or read of an answer. These migraine cases are very numerous. They begin early in life with what we call biliousness, with periodic vomiting, and they cannot remember when the trouble began. It is an hereditary disease and should be treated in the manner spoken of by Dr. Jones.

DR. TAYLOR (closing): I feel that my paper has elicited a very good and interesting discussion. As regards recurrent vomiting as a distinct disease, I do not think it is anything more than a group of symptoms, and I am sure in different patients it is due to a different cause or causes. Dr. Schlutz and Dr. Sheldon think that in a great many cases, not in all, there is a distinct nervous defect as a basis. One sees patients in whom the nervous element is so clear and so definite that it surely outbalances any other factor in producing it. I have seen such cases. I am very cautious not to advise surgical interference in such cases unless the hymptoms are such as to warrant it.

With reference to the appendix, we see a great many children coming to our offices with indefinite abdominal pain, without a localizing pain, without localizing tenderness, without tenderness following pain, and so on. This pain, which may be felt anywhere in the abdomen in some of these cases, leads us to believe that it is not due to the appendix. This type of abdominal pain is frequent in cases with recurrent vomiting.

The question regarding infection of the accessory nasal sinuses was raised. These children all received the routine ear, nose and throat examination, and in none of them was there any mention of disease of the accessory sinuses, although at the time the children were examined the sinuses were being searched and examined repeatedly. I may be in error, but I believe that the antrum until the age of eight years does not figure as a source of constant focal infection. The ethmoid cells figure earlier, and it may be they are responsible.

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MINNESOTA MEDICINE'S FIRST YEAR

Statement by the Editing and Publishing Committee.

Minnesota Medicine completed the first year of its publication with the December issue. With all expenses paid and a balance of $400.00 remaining to the credit of the State Medical Association, *Minnesota Medicine* enters upon the second year with every confidence in the future.

The Editing and Publishing Committee feels that it is most gratifying to have even a small balance on the profit side of the ledger as the result of the first year's operations, especially as during this time the world was plunged in its greatest war, with all of the attendant disorganization of entire social systems.

These results are largely due to the co-operative support and assistance of the members of the State Medical Association, for which grateful acknowledgement is hereby made.

Too much praise cannot be given to our talented and hard working editor, Dr. E. T. F. Richards, to whose labors in behalf of *Minnesota Medicine* the Editing and Publishing Committee desires to pay special tribute.

The Journal of the American Medical Association during the past summer indorsed editorially the action of the Minnesota State Medical Association in joining the large majority of the states by publishing its own organ, and complimented the Association on the high standard which *Minnesota Medicine* had constantly maintained.

Since the publication of its own organ is working out so satisfactorily, the Editing and Publishing Committee point with much satisfaction to the confidence with which the House of Delegates entered upon this venture. There was not a dissenting voice in 1916, when the Committee was appointed to investigate and report upon the advisability of the publication of a journal, and the acceptance of the report of that Committee in 1917 was also unanimous, as was the vote upon the commendatory resolution of the 1918 House of Delegates upon the success of the Editing and publishing Committee in the conduct of the Journal.

The Editing and Publishing Committee regretted its great loss in being deprived of the invaluable council and assistance of Dr. E. W. Buckley whose term has expired. Dr. Buckley accepted the appointment on the Editing and Publishing Committee only on condition that he be given the one year term of office, and with the stipulation that he would not accept a reappointment. In the selection of Dr. J. T. Christison, who succeeds Dr. Buckley, the President has made a wise choice, as Dr. Christison brings to the position the record of much conscientious work done for the State Association and other medical organizations.

NEUROCIRCULATORY ASTHENIA

Neurocirculatory asthenia has been one of the greatest problems which the examiner of military recruits has had to meet. Although with the war over, the problem is perhaps slightly less pressing, yet the condition is one seen in civilian life daily and as such war-

rants our closest attention. One of the articles presented in this issue bears directly on the question, and recently, Major Friedlander and Captain Freyhof (Arch. of Int. Med., Vol. 22, No. 6) have presented an intensive study of fifty such cases, analyzed after the method of T. Lewis. In this group pain was the most frequent symptom complained of. The location of the pain was usually in the precordial region; at times in a well defined area, but again seemed to be a hyperalgesia of the chest wall. Dyspnea on exertion, paroxysmal palpitation, giddiness, nervousness, weakness, sweating and flushing were next in order of frequency of occurrence. *No one symptom predominated.* Precordial distress including dyspnea, pain and palpitation, nervousness, weakness and giddiness characterize the syndrome.

The general physical status of the group showed vasomotor instability as evidenced by alternating flushing, pallor, cold, cyanotic, clammy extremities, and marked evidence of dermatographia. Fifty-two per cent were robust and well developed, while forty per cent were rather slender, flat-chested and showed poor muscular tone.

The cardiac status showed no one in Friedlander and Freyhof's group presenting evidence of structural cardiac change. The relative cardiac dullness was constantly within normal limits. Twenty-two per cent had functional apical murmurs, while 28 per cent had accidental pulmonic systolic murmurs. Two men showed impure first apical sounds, while two had a reduplication of the first sound. The response to exercise was fair in 40 per cent, good in 50 per cent, and poor in 10 per cent. The exercise test was "one hundred hops on the left foot." Ten per cent of the men had an apical systolic thrill palpable after exercise or excitement. A respiratory arrhythmia, more marked in some than in others, was present in all cases.

Of the fifty men in the group the tonsils were the worst offenders as portals of entry for infection, 90 per cent having chronic suppurative tonsillitis. Thirty-four per cent gave positive findings of oral infection. Following extraction and after cleaning up the mouth infection, a definite, marked improvement was observed, not only in general conditions but a specific beneficial result was noted in the heart rate and character of the response to exercise. This is in accord with the view that systemic irritation results more frequently from nonencapsulated granulomas on the apices of teeth than from definitely encapsulated blind abscesses.

Such are the common clinical manifestations of this frequent syndrome. The treatment of it is not by any means difficult and, as the army has well demonstrated, the results of treatment are most encouraging. Essentially the management of neuro-circulatory asthenics consists, first, in the thorough eradication of all existing foci of infection and, secondly, of a systematic series of carefully graduated exercises.

A recent article by Captain Bertnard Smith (Jour. A.M.A., Vol. 72, No. 2), gives in detail the type of exercises employed, showing the gradually progressive character of them from the simple exercises of the extremities up to the more vigorous exercises involving the use of trunk muscles. This writer points out that the main problem in these cases is to improve the general physical condition of the patients, and but little progress can be made in this direction until they begin to get some self-confidence, and realize that even if they do get tired, short of breath or have some pain in the chest, nothing serious is going to occur. This type of individual must be gradually taught that it is safe for him to venture beyond what he has previously considered the limit of his physical activity. With this in view, the exercises of the first and second grades are given in slow rhythm, and care is taken to avoid short, snappy commands.

Neurocirculatory asthenia is a condition which has been sadly neglected, the attitude of the profession largely being that, as the underlying status is congenital, efforts to overcome it were hardly worth while. Needless to say, such an attitude is wrong. The army has proved that a very great deal can be done for these unfortunates.

The army's successful method in meeting this problem should be at once adopted by all civilian practitioners to raise this large group of individuals, both men and women, hitherto wrongly labeled "cardiacs," to the plane of successful self supporting happy citizens.

NEWS FROM ABROAD

We are indebted to Dr. R. E. Farr of Minneapolis, for permission to publish the following letter from Capt. Stanley R. Maxeiner, which we feel sure will be of great interest to all our readers:

November 15, 1918.

Dear Doctor Farr:

I thought you would be interested to know how I spent the leave which I have had in "Blighty." After 16 months of active service, (15 of which have been abroad and 10 of these in the line), you may guess I was glad to get this my first furlough and that I had enough things scheduled, that would take me much more than my 14 days to do. I had decided that I must seize every opportunity to see all that was possible in the line of clinics, as well as the things interesting to the average traveler. With that in mind, I armed myself with letters of introduction from my British colleagues to prominent Surgeons in London, Aberdeen, Glasgow and Edinburgh.

I left Calais on Oct. 24th and arrived in London via Dover on the same day. I spent five days in London, during which time I saw such well-known places as The Tower, London Bridge, St. Bartholomew's Church, which my ancestors attended and where some of them lie buried; also St. Paul's Cathedral and many other interesting places. I saw several good theatres which we have no opportunity of doing here. One of the plays was at Drury Lane, the theatre made famous by Shakespeare. Needless to say, I enjoyed all of these things, but I must tell you more of my visits to clinics.

I first visited Guys Hospital in London where I saw Lt. Col. Fagge, a man trained by Lane and to whom I am particularly grateful for assistance in arranging clinics. I was particularly interested to note that he used no antiseptic on the base of the appendix, which he ligated with silk and did not invert. In most cases he closed the wound with silk and silkworm gut sutures, which I later found to be common porcedures in England and Scotland.

He did, under local, a suprapubic cystostomy preliminary to prostatectomy, in a man of 70 years with a very high blood urea content. His anesthesia was not ideal.

Two of the most enjoyable afternoons I had were spent with Sir Arbuthnot Lane, also at Guys. ' He is a grand man, charming to meet, and a "master" as I heard him spoken of at the hospital. I saw him do one laparotomy for the reparation of troublesome adhesions following a colectomy. The first operation had been done for toxaemia due to stasis in the large bowel. The patient had improved a great deal and had gained in weight. Adhesions were separated and abraded surfaces peritonized in so far as possible. The sites of his anastomosis and excision were remarkably good. As in the case of others he had not solved the problem of preventing the reforming of adhesions. The second case he did was for obscure gastric or duodenal symptoms and which at operation he stated were due to ascending infection due to stasis, the result of congenital malformations persisting in the form of restricting membranes and veils. These hampered the freedom of the sigmoid, caecum and pylorus. The latter was bound closely to the gall bladder and under surface of the liver. These bands and veils were carefully divided without denuding of peritoneum and greatly increased the mobility of each part. He prognosed great improvement.

We all associate Sir Arbuthnot with the Lane Plate and Lane Technique of using the same. I had the great pleasure of seeing him plate a fracture of the middle third of the humerus and fractures of the middle thirds of Radius and Ulna. Both cases were three days after injury and there had apparently been little effort at reduction before operation. The reduction in each case was anatomically perfect and accomplished with the least possible tissue trauma. His technique was supberb and one can quite easily see how he can bury plates and not have to remove them later. Never during either operation did he or his assistants touch with their fingers any tissues or any part of any instrument that came in contact with the wound.

I next visited Aberdeen, Scotland, one of the most beautiful cities I have ever seen. It is built entirely of gray granite and from the looks of things should endure for ages, even the weather of Scotland. Marischal University and Kings College are beautiful examples of the very new and the very old architecture to be found in the British Isles. I spent one day in Glasgow where I saw the River Clyde and its famous ship-building yards. There are numbers of grand public buildings here, such as the Art Museum and the University, with one of the finest halls I have ever seen in which is a magnificent organ, the gift of Carnegie. I was unfortunate in my arrangement of clinics in Aberdeen and Glasgow.

In Edinburgh I again visited the hospitals. At the Royal Infirmary I saw Dr. Miles, a very deft and skilled Surgeon, do a suture of a severed peroneal nerve following a bullet wound. He worked without gloves and used non-absorbable sutures throughout. No attempt was made to wrap the point of suture.

I next visited Prof. Alexis Thompson. He performed an excision of the rectum for carcinoma, $2\frac{1}{2}$ weeks after a permanent preliminary colostomy. He did not remove the entire segment distal to his colostomy but, after removal of the diseased portion, anchored the lower end of the remaining bowel to form a permanent fistula. He was compelled to sacrifice a part of the posterior wall of the vagina and only partially closed the wound. He reported that since he made a permanent artificial anus and did not attempt to save the sphincter his percentage of recurrences in rectal cancer had been greatly reduced.

I was particularly interested in a herniotomy that he did in which he put no sutures between Int. Oblique and Poupart's ligament. He stated that because the sac was congenital the internal oblique required no suture in ordinary cases. He, of course, excepts hernia with very large internal rings. He closed the wound anatomically. In femoral hernia he said that he op-

ened the abdomen to remove the sac and made no attempt to close the femoral opening.

After his clinic he entertained a Doctor from New Zealand, one from Texas and myself at luncheon at the University Club.

It was in Edinburg that I met Dr. Mounahan of International Falls, the only acquaintance I have met since I left New York.

On my return to London I went to see Mr. Jas. Berry at the Royal Free Hospital. In his first case, an appendectomy, he also paid little attention to the stump of the appendix. His second case was an intestinal fistula following the drainage of an abscess. He was most conservative and closed the hole in the bowel without exploring the abdomen. From clinical evidence he concluded that there was no distal obstruction.

In his third case he removed the stitches following an operation for cleft palate. In this case he had followed his usual custom of closing the lip first (before 2 months). It had been a very bad case of double hare-lip and cleft palate with protruding premaxilla. The facial contour had been excellently restored and the lip was a very good one, although he was not proud of it.

In the present case he had attempted to close the palate completely at 8 months. The soft palate and posterior part of the hard palate had united perfectly, but the anterior part of the hard palate had not joined. He said he did not mind this, as often in bad cases he closed the posterior part first. The remaining fistula tends to grow smaller and at the age of 1½ to 3 years is quite small and closes with ease.

Mrs. Berry, who is a very able and charming woman, and who is also a physician, gave all of Mr. Berry's anesthetics. In the evening I was entertained at dinner at their home. They both had very pleasant recollections of Minneapolis and Lake Minnetonka, and inquired after their good friend Dr. David Owen Thomas.

My last visit to clinics was to see Sir John Bland-Sutton at the Middlesex Hospital. The visitor is much more impressed by the speed and dexterity of this Surgeon than by his technique. The first case was an amputation of the breast for carcinoma. A section of the growth had been removed two days previously and was reported by the pathologist to be malignant. He removed the breast without removing either pectoral muscle. The fat and glands of the axilla and the breast were removed in one piece, working from breast to axilla. The axillary dissection was not nearly so complete as I have been accustomed to see.

Case two was a partial thyroidectomy for cystadenoma. It was particularly easy after rupture of the cyst. The third case was a hysterectomy for suspected carcinoma. It was done very quickly with the use of but one clamp on each broad ligament.

The fourth and last case was a double salpingectomy and hysterectomy for double pyosalipinx and tubo-ovarian abscesses of gonorrheal origin. In this case, with the patient in the Trendelenberg position and partially eviscerated, the abscesses were opened and both tubes and uterus removed without any attempt to protect the general peritoneal cavity or the eviscerated intestines by means of packs or towels.

After seeing all of these excellent clinics and having a very good time, I returned to France via Calais on November 7th, just in time to help celebrate the signing of the Armistice.

Since my return our unit has moved forward to Tourcoing, a city of about 80,000 inhabitants, which was recently evacuated by the Germans. We are in a large school building called the "Lyceum National," which was used as a hospital by the Germans for 4 years. We have about 450 patients, a large number of whom are Influenza and Broncho-pneumonia cases. The mortality among the latter is very high. Since the cessation of hostilities I am having much less X-ray work to do and am spending much more time doing clinical work.

It is a great pleasure to be stationed in so fine a building and to sleep in good quarters again. Tents for hospitals and for billets have decided disadvantages in winter, when fuel is such a problem.

With kindest regards, I remain,

Yours sincerely,
Stanley R. Maxeiner,
Capt. M.C.U.S.A.,
Radiologist, 8 C.C.S., B.E.F.

OBITUARY

DR. EDWARD P. RYAN

Dr. Edward P. Ryan, St. Paul, formerly of Stillwater, died on December 31, 1918.

DR. OTTO L. WINTER

Dr. Otto L. Winter passed away at his home in River Falls, Wis., on January 2d, 1919, of pneumonia following influenza.

DR. THOMAS M. THAYER

Dr. Thomas M. Thayer, surgeon on the Breckenridge division of the Great Northern Railroad died at Herman, Minn., December 22, 1918, at the age of 42 years. He is survived by his widow and one daughter.

DR. CORNELIUS WILLIAMS

Dr. Cornelius Williams, a resident of St. Paul for the past thirty-six years, died at St. Luke's Hospital on December 29, 1918. Dr. Williams was 73 years of age. He is survived by one son, S. W. Willaims, of Boston, Mass.

DR. MITCHELL MIKKELSEN

Dr. Mitchell Mikkelsen, pioneer physician and surgeon of Wells, Minn., passed away at his home on Wednesday, January 8th. His remains were taken to Winnebago and put into a vault where they will remain until his sons, William and Mitchell, both in the service overseas will return, when the interment will be made at the former home, Delavan, in the family burial place.

DR. GEORGE E. PETERSON

Dr. George E. Peterson of Dassel, Minn., passed away at his home on January 5th, following an attack of pneumonia from which he had suffered about ten days. Dr. Peterson was born in Wright County, March 6th, 1878. After graduation he practiced in North Dakota and at Murdock, Minn., and for the past ten years has been associated with his brother, Dr. A. C. Peterson, at Dassel. He is survived by his widow, one sister and four brothers.

LIEUT. EARL W. GILROY

Lieut. Earl W. Gilroy of Minneapolis, died from bronchio-pneumonia on December 30, 1918, a few weeks after he had been honorably discharged from military service. Dr. Gilroy was a graduate of St. Thomas College and entered the University of Minnesota in 1910 at the age of 16. He later entered the University of Chicago and there received his degree of bachelor of science at the age of 20. At 22 he graduated from Rush Medical College, Chicago, and by competitive examination secured an appointment as interne in the Cook County Hospital, Chicago. His first war orders took him to Fort Riley, Kansas, where he received his preliminary training. On July 3, 1918, he was transferred to the base hospital at Camp Wheeler and assigned to the pathological laboratory there. In a few months he was made head of the department, which position he held until discharged on December 3, 1918. He is survived by his mother and by an uncle, Dr. R. E. Farr of Minneapolis. His funeral was held on January 1st, 1919, at Montello, Wis.

OF GENERAL INTEREST

Dr. E. M. Howg, of Rochester, has moved to Slayton, Minn.

Dr. H. H. Hanson, formerly of Hallock, has moved to Kennedy, Minn.

Dr. William Clay Dieterich formerly of Waverly, has moved to Truman, Minn.

Dr. Frederick H. Neher, after seven months service in the army has returned to St. Paul.

Dr. Carlton Graves, Aitken, Minn., has been appointed health officer of Aitkin to succeed Dr. F. E. Murphy.

Dr. F. Metcalf for over eleven years physician at Winton, Minn., has moved to Fulda, where he is to have charge of a hospital.

Dr. G. L. Jacquot of Ivanhoe, Minn., has gone to Chicago where he will take a special course in eye, ear, nose and throat work.

Dr. William Arthur Piper who has been stationed at Fort Riley, Kansas, for several months, has returned to Mountain Lake, Minn.

Dr. C. R. Christianson formerly of Starbuck, recently received an honorable discharge from the army and has now located in Morris, Minn.

Dr. G. J. Tweedy who was commissioned a captain and spent two months at Camp Dodge, has returned to Winona and resumed his practice.

Dr. William H. Daniels, Crookston, has returned home from the United States army base hospital service and has resumed his practice.

Lieut. W. A. Meierding has returned to the base hospital at Fort Riley, Kansas, after spending a week with his family at Springfield, Minn.

Dr. D. C. Jones, St. Paul, officially ended his term as coroner of Ramsey County on January 4th. He has been succeeded by Dr. C. A. Ingerson.

Dr. Henry Lysne, Minneapolis, recently returned home from the officers Training Camp at Fort Riley, Kansas, where he has been for the past two months.

Dr. Bret V. Bates has nicely recovered from the effects of being gassed in the Argonne Forest and expects to return to Wheaton and resume his former practice within a very short time. Dr. Bates was recently commissioned a Captain.

Dr. W. Wright recently submitted his resignation as assistant superintendent of the City and County Hospital, St. Paul. Dr. D. B. Rice was appointed his successor.

Dr. W. V. Lindsay of Winona is stationed at Evacuation Hospital, No. 17, Vladivostok, Siberia. Dr. Lindsay was promoted to the rank of Major in September, 1918.

Dr. J. P. McDowell former city health officer of St. Cloud, Minn., recently returned home from Fort Oglethorpe, Ga., where he has been stationed for some time.

Dr. Andrew Sivertsen of Minneapolis, who has been stationed at Fort Riley, has been honorably discharged from the service and returned to his practice in Minneapolis.

Dr. J. W. Daniels, St. Peter, Minn., who has been in the army service for the past two years, recently returned from California. He expects to resume his practice in St. Peter.

Dr. W. E. Patterson of Hibbing and formerly of Westbrook, has decided to return to Westbrook and has made arrangements whereby he will take over the work of the late Dr. H. A. Schmidt.

Dr. Bjarne Ravn returned recently from Chattanooga, Tenn., near which city he has been stationed during his period of army service. He expects to resume his practice at Windom, Minn.

Dr. Albert G. Moffatt of Howard Lake, who has been in the government service at Camp Sheridan, Chicago, and who was recently mustered out with the rank of captain, has decided to locate at Litchfield.

Dr. C. W. Slusser formerly of Grangeville, Idaho, and who was recently discharged from the Medical Corps of the U. S. Army, has become associated with Dr. F. A. Allen at the Allen Hospital at Crosby, Minn.

Dr. W. N. Kendrick, who has held a captain's commission, and who has been stationed at Camp Pike near Little Rock, Arkansas, was recently mustered out of the army service and has returned to his home in Spring Valley, Minn.

Dr. Clara Eirley, who for the past five years has been in charge of the women's department of the State Hospital, St. Peter, recently resigned her position and left for Moreland, Indiana, where she expects to spend some months in rest before again engaging in work.

The quarterly meeting of the Red River Valley Medical Society was held in Crookston, on December 26, 1918. The following officers were elected for the ensuing year: President, Dr. F. M. Dryden, Crookston, Minn.; vice-president, Dr. Ed Bratrud, Warren, Minn.; secretary-treasurer, Dr. A. A. Kahala, Crookston, Minn.

At the twenty-eighth annual meeting of the Western Surgical Association held in Chicago recently, the following officers were elected: Dr. Roland Hill, St. Louis, president; Dr. Emil Beck, Chicago, Dr. George N. Kreider, Springfield, Ill., vice-presidents; Dr. Arthur T. Mann. Minneapolis, secretary-treasurer. Dr. Edward Evans, La Crosse, Wis. and Dr. E. S. Judd, Rochester, Minn., were elected to the executive council.

The Pine County Board of Commissioners at its first meeting of the year held in January named county physicians as follows: Dr. W. C. Ehmke, of Willow River, to have Pine Lake, Finlayson, Birch Creek, Sturgeon Lake, Windmere, Norman, Bruno, and Kettle River towns, and Willow River, Sturgeon Lake, Rutledge and Finlayson villages; Dr. B. S. Bohling of Sandstone has Danforth, Arna, Wilma, Fleming and Dosey towns, and Sandstone village; Dr. H. P. Dredge of Sandstone, Dell Grove, Sandstone, Kerrick, Nickerson and Bruno towns, and Sandstone village; Dr. E. L. Stephan of Hinckley to have Brook Park, Mission Creek, Crosby, Hinckley, Barry, Clover and Ogema towns, and Hinckley village; Dr. R. L. Wiseman of Pine City, Rock Creek, Royalton, Pine, Chengwatana and Pokegama towns, and Pine City village.

NEW AND NON-OFFICIAL REMEDIES

During December the following articles were accepted by the Council on Pharmacy and Chemistry for inclusion with New and Non-Official Remedies:

Non-proprietary Articles:
Benzyl Benzoate.
Emetine Bismuth Iodide.

Abbott Laboratories:
Emetine Bismuth Iodide-Abbott.

Hynson, Westcott and Dunning:
Benzyl Benzoate-H. W. and D.
Solution of Benzyl Benzoate, Miscible-H. W. and D.

Merck and Company:
Diethylbarbituric Acid-Merck.
Diethylbarbituric Acid-Merck Tablets, 5 grains.
Sodium Diethylbarbituric Acid-Merck.
Sodium Diethylbarbituric Acid-Merck Tablets, 5 grains.

H. K. Mulford Company:
Bismuth Emetine Iodide-Mulford.
Cachets Bismuth Emetine Iodide-Mulford, 8 grains.

E. R. Squibb and Sons:
Chlorinated Eucalyptol-Squibb.

Takamine Laboratory:
Arsaminol—
Arsaminol 0.1 Gm. tubes.
Arsaminol 0.4 Gm. tubes.
Arsaminol 0.2 Gm. tubes.
Arsaminol 0.5 Gm. tubes.
Arsaminol 0.3 Gm. tubes.
Arsaminol 0.6 Gm. tubes.

NEW AND NON-OFFICIAL REMEDIES

Emetine Bismuth Iodide.—A complex iodide of emetine and bismuth containing from 17 to 23 per cent of emetine and from 15 to 20 per cent of bismuth. It has the action of emetine, but when taken by mouth, it is less likely to cause vomiting than the soluble salts of emetine administered orally. It has been used with apparent good results in the treatment of chronic cases and carriers of amebic dysentery, even where the hypodermic administration of emetine has failed. The commonly used dose has been 0.2 Gm. (3 grains— daily for four days, either in a single dose at the midday meal or in divided doses.

Emetine Bismuth Iodide (Abbott.)—A brand of emetine bismuth iodide complying with the N. N. R. standards. The Abbott Laboratories, Chicago.

Bismuth Emetine Iodide (Mulford).—A brand of emetine bismuth iodide complying with the N. N. R. standards. The H. K. Mulford Co., Philadelphia.

Cachets Bismuth Emetine Iodide—Mulford. 2 grains—Each cachet contains 2 grains of bismuth emetine iodide (Mulford). The H. K. Mulford Co., Philadelphia.

Creosote Carbonate S. and G.—A brand of creosote carbonate, U. S. P. Schering and Glatz, Inc., New York.

Guaiacol Carbonate—S. and G.—A brand of guaiacol carbonate, U. S. P. Schering and Glatz, Inc., New York (Jour. A. M. A., Dec. 14, 1918, P. 1997).

Benzyl Benzoate.—The benzyl alcohol ester of benzoic acid. It lowers the tone of unstriped muscle and has been suggested as a remedy against renal, biliary, uterine and intestinal colic and other spasms of smooth muscle, including angiospasm. Its clinical use is in the experimental stage. The dose is from 0.3 to 0.5 Cc. (5 to 7 minims). Benzyl benzoate is a liquid at room temperature, insoluble in water, but miscible with alcohol, chloroform and ether.

Benzyl Benzoate—H. W. and D.—A brand of benzyl benzoate complying with the tests and standards of N. N. R. Hyson, Westcott and Dunning, Baltimore, Md.

Solution of Benzyl Benzoate, Miscible—H. W. and D.—A solution of benzyl benzoate—H. W. and D. in 78 Gm. ethyl alcohol emulsified with 2 Gm. castile soap. It has the actions and uses of benzyl benzoate. Hynson, Westcott and Dunning, Baltimore, Md.

Diethylbarbituric Acid-Merck.—A brand of barbital complying with the N. N. R. standards. The actions, uses and dosage of barbital (first introduced as veronal) are described in New and Non-Official Remedies. Merck and Co., New York.

Diethylbarbituric Acid-Merck Tablets, 5 Grains.—Each tablet contains 5 grains of diethylbarbituric acid-Merck. Merck and Co., New York.

Sodium Diethylbarbituric Acid-Merck.— A brand of barbital sodium complying with the N. N. R. standards. The actions, uses and dosage of barbital sodium are described in New and Non-Official Remedies. Merck and Co., New York.

Sodium Diethylbarbituric Acid-Merck Tablets. 5 grains.—Each tablet contains 5 grains of sodium diethylbarbituric acid-Merck. Merck and Co., New York (Jour. A. M. A., Dec. 28, 1918, p. 2153).

PROPAGANDA FOR REFORM

Leonard Ear Oil.—This is an alleged cure for deafness, sold by A. O. Leonard, New York City. Formerly it was sold on the mail order plan as an accessory to Leonard's Invisible and Antiseptic Ear Drums. Now "Ear Oil" is sold in drug stores. The Department of Health in the city of New York found it essentially to be liquid petrolatum with camphor, eucalyptol and alcohol emulsified by a soft soap, prosecuted Leonard, and prohibited the sale of the "Ear Oil" in New York City. The sale of the "Ear Oil" has also been prohibited in Cleveland. (Jour. A. M. A., Dec. 7, 1918, p. 1932.)

Emetin Bismuth Iodid.—The Council on Pharmacy and Chemistry reports that because of the apparently good results obtained with it, emetin bismuth iodid has been accepted for New and Non-Official remedies. Emetin bismuth iodid is insoluble in water and dilute acids, but is decomposed by alkalis, and thus should pass the stomach unchanged but exert its action in the intestines. Those who have reported on the use of the drug in amebic dysentery report that the disappearance of ameba from stools was generally complete and apparently permanent even in chronic cases of carriers and in cases where the hypodermic administration of emetin has failed. Purging and vomiting, however, are not entirely avoided. The drug is usually given in a single dose of three grains at the midday meal for twelve days. (Jour. A. M. A., Dec. 14, 1918, p. 2013.)

Fact and Opinion on the Influenza Epidemic.—At the recent meeting of the American Public Health Association the discussions relative to the etiology of the

present epidemic resolved themselves into the belief that the bacillus of influenza is not the primary etiologic factor and that the actual cause is as yet unknown. In the argumentation for and against the face mask as a means of preventing the spreading of the disease, sight was lost of the fact that definite evidence has been presented to show that the wearing of a mask prevents the diffusion of pathogenic organisms of which we have definite knowledge. A paper was presented which indicated to the satisfaction of most listeners that a significant factor in the spread of the epidemic in army camps was the inadequate washing of mess kits. (Jour. A. M. A., Dec. 21, 1918, p. 2074.)

The Goldwater Ordinance.—In 1914 the Department of Health of the City of New York revised the Sanitary Code so as to require that no "patent medicine" should be sold in the City of New York unless the names of the potent ingredients are declared. The ordinance was bitterly fought by the "patent medicine" interests, the fight being led by E. Fougera and Co., E. N. Crittenton Co., and H. Panten and Son. Now the Appelate Court of New York has decided that the ordinance is void, but has upheld the principle that a disclosure of the formula of medicines may be required. The underlying principle of the ordinance was the right on the part of the city to require disclosure of ingredients, and that right the Appelate Court upholds. (Jour. A. M. A., Dec. 21, 1918, p. 2093.)

Influenza Vaccine. —So far but two definite reports of adequately controlled experiments on the use of influenza vaccine appear to have been published. That of Barnes concerned the use of the Leary vaccine, composed of strains of the influenza bacillus, and indicated that the vaccine was not of prophylactic value. The second report, by G. W. McCoy and co-workers, concerned a carefully controlled experiment on the use of a mixed vaccine similar to that brought out by Rosenow, and indicated that this vaccine was not efficacious as a prophylactic against the present epidemic. (Jour. A. M. A., Dec. 21, 1918, p. 2094.)

CORRESPONDENCE

Jan. 4 1919.

Dear Editor:

Influenza and pneumonia were made reportable diseases by action of the Board of October 8. This information has been circulated to the physicians in the State but as yet they do not seem to realize the necessity of reporting their cases.

Will you not call the attention of the physicians in Minnesota through your columns to the necessity of reporting cases of influenza and pneumonia to the local authorities in the same manner prescribed for other communicable diseases? We are exceedingly anxious to compile records as nearly accurate as possible of the severity of the outbreak in this state, and will appreciate your co-operation.

Very truly yours,

C. E. Smith, Jr.,

Assistant Secretary.

PROGRESS IN MEDICINE AND SURGERY

LOCAL INFECTION IN CHILDHOOD: Sanford Blum (American Journal of Medical Sciences, Nov., 1918) thinks that attention has recently been concentrated upon certain potential foci of infection to the exclusion of others equally important, and as a result the subject is being treated in a narrow manner. At the same time he deplores the inclination of physicians to attribute too many ailments to focal infection. He says focal infection implies: 1st—That there exists or has existed a circumscribed lesion or focus. 2nd—That the lesion is of bacterial nature, and as such is capable of dissemination. 3rd—That from the focus there has resulted systemic infection or infection of other contiguous or non-contiguous parts. He argues that the presence of pathogenic micro-organisms within a circumscribed area does not, per se, constitute an infective process; at most it may be potential, and for the creation of infection from these foci, the bacteria must invade the circulation, and the part to be infected must be ready for their reception and propagation. The presence of pathogenic bacteria in the mouth and fauces with subsequent development of endocarditis is by no means conclusive evidence to him that the endocarditis originated from these foci, and while willing to grant that under the proper auspices endocarditis can originate from these sources, he states that the frequency in childhood of alveolar disease and tonsillitis when contrasted with the rarity of endocarditis, justifies the conclusion that such a sequence is exceedingly rare. The assumption that streptococci harbored in the tonsils possess special selective powers against the endocardium and joints seems to him unjustified. He believes the fact to be that when bacteria are injected into the circulation arthritis occurs as an incident of the induced septicemia. He says that in general, pathogenic bacteria manifest a predilection for the serous and synovial membranes and when, as a result of circulatory invasion by bacteria, morbid processes ensue, we may have a meningitis, pleuritis, endocarditis or synovitis. He points out that as the science of bacteriology has developed we have been able to designate definite types of arthritis, for example, gonorrheal arthritis typhoid arthritis, etc., and it is obvious that the power of attacking serous and synovial membranes is not limited to the streptococcus; and so he thinks the selective morbidity is due not to specified micro-organisms but to lower power of resistance to bacterial aggression possessed by serous and synovial membranes, as contrasted with muscles, bones, nervous and connective tissues. In childhood, however, secondary foci in the more resistant tissues are commoner than in adults, due to weaker power of resistance at this stage of life, and he believes the occurrence of tuberculous hip joint disease frequently after an injury may thus be explained. Tubercular bacilli having gained access to the circulation form a focus in the body, lie in wait for a favorable opportunity and then secure a foothold in the joint as a result

of trauma, which offers a point of lower resistance. In addition to this septic effect of focal infection he points out that the systemic effects of toxines must be considered, and thinks it probable that toxins are responsible for lowering the power of resistance of the synovial membranes and thus facilitating the invasion by bacteria. The diagnosis requires the recognition of a morbid process as secondary, and the tracing of it to its source. Sepsis denotes an infective process; toxemia also may be due to focal infection, but in childhood other processes may cause toxemia, as for example, the eruptive fevers. The custom of indiscriminately ascribing to focal infections individual symptoms in his opinion is precarious and unjustifiable. The direct cause should be sought. Particularly important sites for infective foci in children are the gastro-intestinal tract and the middle ear, but the presence of pathogenic organisms in a certain locality does not constitute an infective focus, for example, colon bacilli in the intestine may remain indefinitely without causing an infective process, also the presence of streptcocci, etc., in the tonsils indefinitely without deleterious effects. He says that sequential disease must be traced to the primary focus and this requires that the correlation of the primary and secondary morbid processes must be proved. He claims that the assertions that, "It has long been known that acute rheumatic joint infections are the result of the primary infection of faucial tonsils or tissues about them—and that an acute endocarditis also has its source in many istances from the faucial tonsils,"—are not borne out by facts. He admits that the tonsils, like other parts of the body, are potential foci which may become active under proper conditions, for example following tonsillectomy. He divides the treatment in two: first, that of the lesion caused by the infection; second, of the infective focus; and thinks that perhaps most often treatment of the lesion by hygienic, medicinal, serological, surgical or prophylactic measures is the only line applicable, owing to inability to locate the source of infection or inability to eradicate it if located. He declares that the creation by operative interference of foci of infection constitutes one of the most important facts in the consideration of this subject, and while the evacuation of abcess cavities, removal of diseased appendices, surgical relief of otitis media and mastoiditis, require no comment for their approval, the promiscuous practice of tonsillectomy must be viewed differently. Too often this procedure converts an innocuous nidis into a virulently infective process. He also blames complicated orthodontia apparatus for frequently opening avenues of infection, and he closes by saying that "The common practice of tonsillectomy and tooth extraction has a diagnostic measure reprehens ble, and should be discontinued, because it is unscientific in that it is a surgical procedure undertaken without definite indication and is attended with danger; and moreover diverts attention from other diagnostic procedures which not infrequently would disclose obvious causes of disease."

W. D. Beadie.

TREATMENT OF PAINFUL DYSPHAGIA IN TUBERCULOUS LARYNGITIS: Robert McD. Lukens (New York Med. Jour., Vol. CVII, No. 8) outlines the means and application of blocking the internal branch of the superior laryngeal nerve in painful dysphagia in a series of nineteen cases. His method is similar to that of Hoffman who originated the treatment in 1908, except that he does not go in with the needle at right angles to the nerve but a little forward, directing the needle inward and backward.

Thorough asepsis should be used throughout as regards the operator's hands, instruments, and skin of neck. The instruments and solution required are: a Luer's or record syringe; tinctu e of iodine; the fluid for injection, which is a sixty-five to eighty-five per cent alcohol. A hypodermic syringe may be used with a one-and-one-half inch twenty-four gauge needle with a sharp point. The solution used consists of novocaine gr. 11; chloroform M X; alcohol dr. VI; water dr. 11 —essentially a sixty-five per cent solution of alcohol.

The patient should be either lying supine with head, neck, and shoulders raised on a pillow and the head turned to one side, or sitting upright in a chair with a comfortable back. The sitting position with the head in a natural position and neck not rigid is the most convenient for patient and operator alike. The greater cornu of the hyoid bone and the superior cornu of the thyroid cartilage is located with the index finger of the left hand and the loaded syringe held in the right hand.

The needle is then thrust through the skin about one inch anterior to the directing finger and a quarter inch above the margin of the thyroid cartilage and pushed backward and inward, the point being raised from time to time to locate its position by the directing finger tip of the left hand.

The patient gives the signal of pain in the ear by raising his hand. The nerve has been touched and a drop or two of solution is injected and a few seconds are allowed to pass to see if there is cough, due to fluid entering the lumen of the larynx. If cough develops the syringe is withdrawn a little and a few more drops injected. If no cough is present then 0.5 cc. of one cc. of the solution is injected, moving the needle around so as to surround the nerve thoroughly. Usually the pain in the ear is intensified by the discharge of the fluid into the tissues about the nerve but passes off in a few seconds, One or both sides may be injected at one sitting. In a series of 36 injections no untoward effects were noted in bilateral injection. One patient complained of a slight constriction in throat, another complained of the same thing with unilateral injection. In none has paralysis or swelling developed.

The side to be injected depends upon the site of the greater pain in swallowing, the site of the lesion, and the side on which the nerve is the more tender. If injection of one side does not relieve the pain, the other side is injected at same sitting. The patient is urged to drink water before and after the injection to note the difference. No contra-indications to the injection are known. In this series of nineteen cases a total of 39 injections were made.

The author's conclusions are:

In all cases of painful dysphagia the internal laryngeal nerve should be blocked. There are no contra-indications to nerve blocking and this procedure aids the dietetic treatment by removing or lessening dysphagia sufficiently to allow the patient to eat the necessary food.

More rest is obtained due to cessation of pain from the throat and any number of injections may be made and the patient kept in constant comfort by injecting as soon as pain recurs.

Histological examinations of injected nerves showed that the results modified the nerve trunk very little.

The writer wishes to urge the wider use of this method of treating painful dysphagia in tuberculous ulceration of the larynx, as it is a procedure which can be learned easily and practiced by the average practitioner.

GEORGE C. DITTMAN.

STUDIES IN FRACTIONAL ESTIMATION OF GASTRIC CONTENTS. II. EFFECTS OF ANTACID MEDICATION ON GASTRIC ACIDITY AND SECRETION: Burrill B. Crohn (Am. Jour. Med. Sciences, June, 1918) in his interesting studies throws a flood of light on these much misunderstood conditions.

By means of fractional estimation of the gastric contents he discovers that the normal variation of acidity at different stages of digestion may account in a large measure for the varying results obtained by different investigators as to the effect of antacids on hyperacidity—the time of digestion at which their tests were made being one of the factors and the initial neutralization of acid values after giving alkalics, with subsequent increase of acidity often above normal, being another factor.

The author's experiments were performed on the emptied fasting stomach in the morning.

A heavy oatmeal gruel was utilized as the test meal.

Specimens of chyme were withdrawn every fifteen minutes until the stomach was empty again, as evidenced by failure to obtain further specimens.

The motility of the stomach was adjudged by noting the last specimen to give the starch reaction with iodine.

The regurgitation of bile was carefully observed, as was also the presence of heavy, ropy mucus characteristic of the pyloric mucus secretion.

In every case, one or more days previous to the experiment, a control curve without medication was plotted.

The patients upon whom the experiments were made were all cases of mild functional gastrointestinal disturbances.

(1) Effect of Alkalies Administered to the Fasting Stomach Before a Meal. Magnesium oxide Grs. XV (calcined magnesia) was given one-half hour before the test breakfast. The previously plotted control curve which reached its height of (94 per cent acid titer) at the end of an hour and then gradually fell to zero, was converted into a curve in which the maximum height (86 to 96 per cent) was reached at the end of the first half hour and maintained at that level to the end of digestion. Furthermore the emptying time was delayed one-half hour.

(2) Effect of Administration of Alkalies in Single Dose During Digestion. Bicarbonate of soda in 30-grain dose given to a patient 45 minutes after the onset of digestion. In fifteen minutes the acidity dropped from 46 per cent to 22 per cent; fifteen minutes later it had rebounded to 78 per cent, which level it maintained for one-half hour and then slowly declined. There was no delay in motility.

A second patient received 60 grains of soda bicarbonate. Here there was no initial neutralization, but the first specimen of chyme withdrawn after fifteen minutes showed an increase in acid titer.

Magnesium oxide was then chosen as the type of more slowly acting and efficient alkali.

A four and half grain dose given directly after eating had no appreciable effect on decreasing the gastric acidity.

The emptying time, however, was delayed 45 minutes, due to a secondary rise in acidity late in the course of digestion.

On doubling the dose of magnesia to nine grains, in another patient, there was a reduced acidity for the first hour and then a rise to way above normal. Motility was slightly delayed.

To a third patient magnesium oxide, twelve grains, was given forty-five minutes after the onset of digestion. At the end of one and one-quarter hours the acidity had dropped from 20 per cent acid titer to 5 per cent alkaline titer, rising within the next forty-five minutes to 88 per cent acid—this point being 24 per cent above the control.

(3) Effect of Administration of Alkali at the End of the Test Meal. A dose of twelve grains of magnesium oxide given one and three-quarters hours after the ingestion of the test gruel caused a rapid and efficient neutralization of the digestive acidity without secondary rise.

(4) Antacid Effect of Bismuth Subcarbonate. A dose of thirty grains given immediately after the meal. The neutralization effect was gradual, moderate and prolonged, without deleterious after-result. Slight prolongation of motility observed.

(5) Kaolin: Action of Inert Mineral Earth on Gastric Acidity. No effect.

(6) Atropine: Its Effect on Gastric Secretion and Motility. Atropine one-sixtieth grain per hypo, given three-quarters hour after the test gruel. Little or no result seen except in the last half hour there was a secondary rise of acid from 32 to 76 per cent. No diminution of acidity observed at any time. A second experiment with a different patient gave practically identical results. Later the former patient was fully atropinized by taking moderate doses by mouth for several days. On testing the stomach contents, no variation from the control curve was noted. On the contrary the average acidity had increased.

(7) Atropine: Its Effect on Hypersecretion. The first case was one of functional hypersecretion of the continuous type. An exploratory laparotomy had failed to show any organic disease. Control tests showed that food left the stomach in two and three-quarters hours, but the secretion continued up to six

and three-quarters hours (19 as long as observed). Next day the same situation obtained, whereupon one-sixtieth grain of atropin was given hypodermically and within an hour the secretion had ceased, but there was a delay in motility up to three and one-half hours.

Repeating these experiments, but giving the atropine by mouth showed an increase in acidity, and the hypersecretion continuing for seven hours, motility unaffected.

(8) Olive Oil: Does it Affect Gastric Acidity? A slight rise of total acids, no effect on motility.

(9) Administering of Alkalies in Divided Doses During Digestion. The previous observations of the effects of alkalies on gastric acidity having demonstrated, first a primary neutralization, and second a compensatory reaction with excessive acid production, an attempt was made to cause a continuous depression of the acid curve by dividing the single dose of alkali into equal portions and distributing these portions over the course of the digestion.

Magnesium oxide used. Five-grain doses given every half hour, beginning forty-five minutes after the onset of digestion, and continued for four doses. The effect was a gradual and permanent depression of the acid curve.

Conclusions:

As regards the alkaline salts both soda and magnesia act in relatively the same manner. Both neutralize the acidity at the moment of administration, the bicarbonate more quickly but less thoroughly, the magnesia more slowly but more effectively.

But after either salt the primary neutralization is followed by an irritative rise to the previous acid level or even above it.

The custom of administering alkalies before meals as is practised by some physicians, is a mistake, for the reason that the meal comes at the time of the secondary rise and the digestive acidity is reinforced rather than diminished.

The disadvantages of a large dose of magnesia, fifteen grains or more, are: (1) that the initial depression is one-half to two hours; (2) the subsequent reaction of the acid-secretory cells is so vigorous that the therapeutic purpose is defeated.

The dose of magnesia should therefore be a moderate one, eight to fifteen grains, depending on the degree of hyperchlorhydria one wishes to effect.

The neutralizing power of the magnesia radical is three and one-half to four times as strong as that of the soda radical.

The method of administering fractional doses of magnesia at intervals during digestion has proved the most practical manner of employing such a salt for the correction of hyperchlorhydria. Five grains every half hour is excellent.

The action of bismuth is highly satisfactory. Its neutralization of acid is deliberate, moderate and prolonged, and a secondary rise of acidity is avoided.

Atropine has a restricted use and should be employed only in hypersecretion.

Lasting relief of hyperacidity is more likely to be found in the proper regulation and restriction of dietary errors as well as in the general control of hygiene and manner of living of each individual patient.

CHARLES N. HENSEL.

THE COMPARATIVE VALUE OF RADIUM AND ROENTGEN RADIATION: R. H. Boggs (The American Journal of Medical Sciences for November, 1918), compares the therapeutic effect of radium and X-rays. He says that all things being equal, radium is preferred where a localized reaction is desired, and Roentgen Rays should be used when large areas are to be treated. In many instances radium should be used locally, while the adjacent lymphatics should be treated by the X-rays.

No tissue is unaffected by either the rays from radium or the Roentgen tube, providing the intensity be sufficiently great and the exposure of adequate duration. There is always a latent period after application of either type of ray. The larger the dose the shorter the latent period will be. Every kind of tissue reacts in its own specific way. The gland cells will be destroyed by a dose which will not destroy cellular tissue or skin; that is, there is a selective action. The lymphatics are very sensitive, being cicatrized by destruction of lymphoid cells. Endothelial linings of blood vessels are very easily affected, causing obliteration of the lumen in small vessels. Endothelium is more susceptible to radium than to X-ray, hence the value of radium is vascular naevi. Diseased tissues are more easily influenced than healthy tissues. The action also varies with the type of the disease. Sarcoma in lymphatics is more easily destroyed than carcinoma, sarcomatous glands being destroyed by one-third to one-fifth the amount of radiation that is necessary for carcinomatous ones.

It is the rule in treating malignancy to give as heavy a dose as the normal tissue will stand and treat the glandular tissue as far away from the growth as possible. Tuberculous adenitis responds more readily than carcinomatous adenitis but not so readily as sarcomatous glandular involvement, but the results in tuberculous adenitis are more permanent than in malignancy.

The rodent ulcer type of epithelioma responds to less radiation than the squamous celled type because the adjacent glands are so early involved. In the squamous type this fact is no certain indication for Roentgen treatment in squamous epithelioma. Epitheliomas on the mucous membranes are particularly malignant, and a marked reaction should be promptly produced.

In treating malignant growths with either radium or Roentgen rays the object is to destroy the cancer cells without permanently injuring normal tissue. After a case is properly diagnosed and classified, the type of treatment must be determined: surgical, radium or Roentgen, or a combination. No method is ideal, but all have merit. Surgery is by no means always the method of first choice, nor should radiation be looked upon as a "last resort" method.

Considering a few special types, he says in part: Carcinoma of Uterus: Here radiation has been used only in practically hopelessly inoperable or recurring cases. The palliation is satisfactory and possibly adds

four to six years to the patient's life. After radium treatment the local effects are most striking; the bleeding ceases and the offensive discharge is checked or becomes odorless. Locally the effect is noticed in from two to four weeks and the cancerous mass begins to shrink. The general health then quickly improves. Pain is relieved, morphine may be withdrawn and the patients are returned to normal for the time at least.

The most desirable technique at present is the use of 50 to 100 mg radium applied locally, and Roentgen therapy used from without.

Carcinoma of the Rectum: The results in this locality vary greatly and cannot be compared with the results in carcinoma of the uterus. Colostomy previous to radiation is being recommended as an advisable preliminary. Carcinoma of the bladder and prostate have been successfully treated by Young who has devised very ingenious methods for application of the element to the growth.

Epithelioma: Radium and Roentgen rays should in general be considered as a routine in treatment of epithelioma, because when properly applied, practically all the epitheliomatous tissue can be made to disappear. Equally good results can be obtained with either agent. In special locations such as the mucous membranes, radium is preferable.

HENRY E. MICHELSON.

BOOK REVIEWS

PRINCIPLES OF BACTERIOLOGY. (By Arthur A. Eisenberg, A.B., M.D. Director of Laboratories, St. Vincent's Charity Hospital; Demonstrator of Pathology, School of Medicine, Western Reserve University; Visiting Pathologist, St. John's Hospital; Visiting Pathologist, Lutherna Hospital; Fellow American Medical Association. Illustrated. Published by C. V. Mosby Co., 1918.)

This book consists of three divisions; first, includes general; second, special bacteriology; third, diseases of unknown origin, bacteria of soil, milk, air, and water, and the general care of the laboratory. Although this textbook is intended primarily for nurses only, it will meet with great satisfaction the demands of many a busy practitioner. The author, convinced that bacteriology being one of the most fundamental subjects in the entire nursing course, has used all the precautions necessary to make this subject clear, simple, complete, and interesting. Looking in the near future, he states, the nurse will unquestionably be acting laboratory assistant or at least a trained technician. And, therefore, with this end in view he has endeavored to include especially all the tests, technic and methods, etc., to give the aspirant in bacteriology not only a general view of the entire course but the details necessary to successfully practice the same.

Under general bacteriology the chapter dealing with the forms, types and theories of immunity is especially commendable. It presents this so frequently unintelligibly expressed subject in a clear, simple, and yet comprehensive manner. The chapters in special bacteriology show not only originality in the arrangement but also in the introduction of material heretofore never included in bacteriology. This has reference to the section in each chapter of Disease Production, Mode of Infection, Disinfection, Prophylaxis. This division, moreover, is very useful because it conveys to the student knowledge which he rightly should have of bacteriology, but unfortunately, ordinarily has not, if he has not previously studied clinical medicine.

JOHN A. LEPAK.

INFORMATION FOR THE TUBERCULOUS. (By F. W. Wittich, A.M., M.D. Instructor in Medicine and Physician in Charge of Tuberculosis Dispensary in the University of Minnesota Medical School; Visiting Physician to University Hospital, Minneapolis, Minnesota. Published by C. V. Mosby Company, St. Louis, 1918. Price, $1.00.)

The author presents a collection of valuable information and statistics concerning the anatomy and physiology of the normal lungs and shows how they may become infected with the tubercle bacilli. He then describes in a most readily comprehensible manner the various stages of development of the infected area. He does not leave his readers here but continues his interesting instruction, ever ready to assist and encourage "the good fighter." Dr. Wittich never fails to emphasize the importance of sanatorium care, during which time the patient is really attending a school of instruction, which if followed, will permit him, not only to save his life, but become a happy and useful member of society rather than a detriment to his community. The author mentions among other points, Diet, Rest and Exercise, Use of Tuberculin, Drugs, Surgery of Pulmonary Tuberculosis, Cautions to be Observed, Tuberculosis and the War, finally concluding with a definition of Terms regarding Information for the Tuberculous. DOLORES M. POSCH, R.N.

ABSTRACTS OF WAR SURGERY. An Abstract o the War Literature of General Surgery that Has Been Published Since the Declaration of War in 1914. (Prepared by the Division of Surgery, Surgeon-General's Office. Published by C. V. Mosby Company, St. Louis, 1918. Price, $4.00.)

This volume, together with index, occupies 434 pages. It does not aspire to anything except prepared abstracts on war surgery, based on articles appearing in all the prominent journals in this country and some of those published abroad.

It is as complete a volume of abstracts as one could wish for but its intrinsic value is the fact that references to the original articles in whole are plainly given.

The abstracts are interesting and one who has not read the original articles can, with great ease and expedition, find in just what journals they have appeared in detail. H. J. O'BRIEN.

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ORIGINAL ARTICLES

ATYPICAL CLINICAL TYPES OF TUBERCULOSIS (CONCEALED).*

George Douglas Head, M. D.,
Minneapolis, Minn.

The various clinical pictures describing tuberculous infections, recognizable by the usual methods employed, do not concern us in this discussion. I will ask you for the moment to fasten your attention upon that class of patients, of which there must be many, who harbor tuberculous lesions either in the lungs, pleura, peritoneum, lymph glands or elsewhere, so concealed as to require a specific test, namely, the tuberculin test, to establish the diagnosis beyond a reasonable doubt.

The fact is well established that a considerable percentage of the human race, apparently in health, show evidence at death, of tuberculosis either past or present. Mendelsohn in 826 deaths from accident and violence found 20 per cent of the individuals with healed, latent or active tuberculosis. I say apparently in health, for we have no accurate data, prior to death, recording the complaints or states of health of this class of persons. It does not necessarily follow because people are about and at work that they feel well and are free of complaints. A very pertinent question to ask and try to answer centers about this group of persons who at death, show post mortem evidence of tuberculosis, healed, latent or active.

Can the tubercle bacillus develop its lesions in the body and fail to produce abnormal sensations, reduced states of nutrition or evidence of chronic toxaemia of which the individual is unconscious? In other words, can tuberculous people go through life free from complaints and entirely unconscious of the slow fires of tuberculosis burning within? If not, what are their complaints? Lack of this information has hindered the development of our knowledge of the symptomatology of tuberculosis. An obstacle of far more importance is the difficulty surrounding an accurate diagnosis of tuberculosis in its quiescent forms.

Pathological studies alone, without the use of a specific test (tuberculin test), cannot answer this question for us. Autopsies cannot be made upon persons while they are living. If they appear healthy and have no complaints we cannot know by autopsy whether they are free of tuberculosis. If they complain of symptoms of one kind or another and our examination is negative for tuberculosis we cannot know, unless we use a specific test, whether the individual is free of tuberculosis, since a pathological examination during life is impossible. If, at death, the individual shows evidence of tuberculosis, healed, latent or active, we cannot know whether he had tuberculosis at the time he was complaining of his symptoms, and if he has never consulted a physician and dies of accident or injury we have no accurate record of his life history so far as his complaints are concerned. It seems quite apparent, therefore, that other sources of investigation, outside of pathological studies, must be called upon to give us accurate information relative to this question.

Some light can doubtless be thrown upon it by a study of the complaints and states of nutrition in children, since in this class of patients the Von Pirquet test is a fairly accurate index of the presence of an active tuberculous lesion, but here the clinician is dealing with a class of patients who do not observe accurately

*Presented at the Annual Meeting of the Minnesota State Medical Association at Duluth, August 28, 29 and 30th, 1918.

nor can they describe well abnormal sensations of one kind or another. Life insurance examination records have furnished some valuable data but here again too little attention has been paid to a careful inquiry into the complaints of persons who apparently in health have presented themselves for life insurance examinations and are found to be tuberculous. It is notorious that such persons attempt to conceal from the examiner all complaints and other evidence of an abnormal state of body or mind. Then, too, individuals are notoriously forgetful of their aches and pains so soon as they are past.

Not long ago the writer examined a young man of twenty years of age who had a few weeks prior thereto, applied for life insurance, presuming himself to be a normal individual. The examiner, however, discovered evidence of a tuberculous infection in the apex of the right lung and the risk was rejected. This patient presented himself for a confirmation or denial of the diagnosis and of course had no personal interest in concealing in any way his symptoms or complaints. The examination which I made confirmed the diagnosis of pulmonary tuberculosis in the upper part of the right lung. I then inquired carefully into the life history of this patient but was not able to elicit from him a single symptom or complaint suggestive of an abnormal state of body or mind. He persistently stated that he felt absolutely well. Only occasionally, however, has one an opportunity to examine a case of this sort which furnishes evidence of undoubted value.

It must be admitted also, that individuals differ markedly in their ability to interpret abnormal feelings. This is well illustrated by the variation shown by human beings to the common sensation of pain. The prick of a pin on the arm of two individuals may elicit a very different response. One person will jump and cry out and clutch the arm, while the other at the same point with the same force will remain quite passive and complain of no real sensation of pain. Even so serious a disease as cancer of the stomach will in some individuals fail to give sensory disturbances until the disease is far advanced and very great weakness is apparent. On the other hand, the very first abnormal sensation that something is wrong and out of tune in the body, will set other individuals on edge, so to speak, and make them very receptive and conscious of all abnormal feelings which a disease process may bring about. It is therefore difficult to know in apparently healthy persons dying of accident, in whom tuberculosis, either healed, latent or active, is present, whether in reality these persons had complaints which because of their stoical nerve construction, they fail to pay attention to and complain about, or whether these persons in reality had no abnormal feelings and were well persons in the true meaning of the term.

From this and other experiences, therefore, it must be admitted, for all practical clinical purposes, that tubercle bacilli may lodge in the human body and produce lesions without causing abnormal sensations which will attract the attention of the host. I firmly believe, however, from a considerable experience that these cases are rare and that could all persons infected be kept under skilled observation, the disease would make itself manifest in the vast majority of persons in sensations sufficiently pronounced to call their attention to the fact.

The difficulties encountered in attempting to interpret with accuracy, incipient and very early tuberculous lesions by the older methods of diagnosis employed, namely, the physical and other objective signs, a study of pulse rates and temperature records, etc., it seems unnecessary for me to discuss. Of course in this connection the care with which the examination is made and the skill of the examiner counts for a great deal in bringing to light these hidden foci of infection, but from a long experience with these older methods I feel quite sure that a large percentage of the cases which I have in mind would be entirely overlooked or wrongly interpreted if these methods were to be depended upon. They certainly cannot be relied upon in attempting to diagnose with any degree of accuracy the class of cases which I wish to present, namely, those tuberculous infections which I have called "concealed," lesions so mild in degree as to escape the detection by the usual methods employed. For their identification one must rely upon a specific test which is at his command in Koch's Old Tuberculin.

An adult presents himself complaining of slight cough, ill-defined pains in the chest or

elsewhere, loss in weight, indigestion, headaches, eyeache, circulatory disturbances in cold hands and feet, insomnia, mental depression, crying spells, backache, marked weakness, huskiness of the voice, clearing of the throat, dizziness, fainting spells, or shows a tendency to play out under the ordinary demands of life which we are accustomed to describe as nervous and physical exhaustion, or a train of ill-defined symptoms out of harmony with a symptom complex expressive of any disease with which we are familiar. It is this group of cases which many times cannot be recognized with certainty without the use of the specific test. Even in the hands of the most expert, if tuberculosis is suspected, only a doubtful diagnosis or one with a question mark after it can be made. Such a diagnosis cannot be utilized in scientific reasoning and must be substantiated by a specific test in order that definite conclusions can be reached. In most instances the clinician is not sure enough of his ground to state his conclusions to the patient and give the individual the advantage which is almost always derived from the intelligent management of the disease. That these poor sufferers should go through life tossed from one clinician to another with the diagnosis of nervous exhaustion or neurasthenia, neuralgia, psychasthenia or Glenard's Disease, operated on for one form of intra-abdominal condition or another, running the whole gamut from nephropexy to operative procedures upon the appendix, gall bladder, stomach, intestines and other organs, is a reproach upon the diagnostic ability of our profession.

I wish to be clearly understood at this point. The writer is not contending for the conception that all persons exhibiting the symptoms of sub-nourished states or abnormal sensations and presenting no clinical evidence of disease, are tuberculous. As you all know there are very definite groups of cases of this symptom type which are met with in syphilis, in cardiac disease, both myocardial and endocardial, in nephritis, in gastric ulcer, in exophthalmic goitre, in chronic toxaemias from foci of septic infections in the tonsils, sinuses, teeth and elsewhere. These must not be overlooked nor must they be confused with the tuberculous group. However, so firmly fixed have become my ideas upon this phase of the subject that I now feel assured that every person giving a symptom complex, to account for which no definite causal factor can be found, should be given a subcutaneous tuberculin test to determinte whether or not they harbor a tuberculous lesion. The confusing clinical picture presented by these slow, low-grade tuberculous toxaemias cannot be otherwise interpreted.

Now it is to the symptomatology of this group of cases which I wish to direct your attention; persons seen clinically, complaining of symptoms to explain which no satisfactory explanation could be given until they were found to be tuberculous by a subcutaneous injection of tuberculin. Many of these patients presented no evidence of organic disease after a searching examination. Others presented doubtful signs in the pleura, lungs, lymph glands, peritoneum or elsewhere, suggestive of, but not distinctive for, tuberculosis, and the test was given to establish the diagnosis beyond question. In a few of the cases the diagnosis of tuberculosis was fairly certain but some features of the case being out of harmony with this diagnosis the test was given to remove all doubt.

In order to present to you some concrete ideas, because I know how easy it is to roam about in a realm of general discussion, I have selected out of my private records, a series of 163 cases in whom, for one reason or another, a subcutaneous diagnostic dose of tuberculin was given and all of whom reacted with a distinctive temperature rise and other signs indicative of a positive reaction. All of the cases were carefully studied prior to the use of the test for evidence of latent or active syphilis, cardiac disease, either endo- or myo-cardial, exophthalmic goitre, gastric ulcer, septic infections in the tonsils, teeth, sinuses or elsewhere. The test was given to clear up the diagnosis. Undoubtedly some errors have crept in, some patients have more than one disease, but the percentage must have been small since the majority of the patients have been under observation for years, and such errors, if they had occurred, would have been discovered in later examinations. In a small percentage of the cases there were associated pathological conditions of one form or another but for the most part this group of cases, proven to be free of all disease other than tuberculosis by the sub-

cutaneous tuberculin test, supplies a very fruitful field for the study of the symptomatology of this type of tuberculosis, the form which I have alluded to in my former papers as the "concealed" type of the disease.

Inasmuch as these patients had all consulted a physician, they were complaining of symptoms of one kind or another. While of course, in many of the cases there was an overlapping in the symptomatology so that no clear-cut grouping could be made, I have endeavored to classify the symptoms according to the most important and prominent complaints which brought the patient for examination. This was rather easy to do since in the regular routine history taking in my work the chief and important complaint of the patient and the one for which he seeks advice is first stated in taking the history and only direct and leading questions are asked after the patient has been permitted to tell his story and describe his symptoms.

By far the largest group of cases fall into what I have called the "cough and cold" group. These comprise 34 per cent. The cough, as a rule, is just enough to attract the patient's attention. It is frequently described as nothing more than a clearing of the throat. There usually is no expectoration. If the patient becomes tired or exhausted or undertakes physical exertion it will be aggravated. It often persists for years. Some of the patients complain of having had it from childhood. In many it recurs after years of quiescence. It is often described as a little nervous cough. Physicians have reassured many of these patients repeatedly that nothing was wrong in the chest. Some are thick-chested with heavy shoulders, muscular, well-developed limbs and have good expansion. I have one patient now who weighs over 200 pounds. The majority, however, are thin, long-chested individuals with high cheek bones and slender limbs. A few of these patients complain of dyspnoeic attacks resembling mild types of bronchial asthma. Most of them complain of catching cold easily and when they take cold, the cough is aggravated and some expectoration may continue for a time to finally cease, and then the so-called little nervous cough continues. Some of these cases will have had a sudden, small or even large, hemorrhage from the lungs when in apparently good health. Well defined physical signs indicative of the presence of a tuberculous infection were absent. Sometimes a careful, searching examination will reveal a friction rub in some part of the chest or a few fine crackles at an apex which do not persist and cannot be interpreted with certainty as evidence of a tuberculous process. These patients may, or may not, complain of any chest pains. The cough and the tendency to taking cold are the important and leading complaints for which they have consulted the physician. Fluoroscopic and stereoscopic X-ray studies of the chest give help in the interpretation of some of these cases, but because X-ray studies so often fail to differentiate between the healed and active lesions I have learned to rely more upon the evidence furnished by tuberculin given subcutaneously. Many of them show the evidence of nervous and physical exhaustion which I shall describe in a later group.

The second group I have classed as the "abdominal distress" group. Twenty per cent of the whole number fall in this category. These patients present themselves complaining of either gastric symptoms, belching of gas, heartburn, etc., or ill-defined pains in the upper, or at times in other parts of the abdomen. Their abdominal distress is of a very irregular type. It lacks the regular time element usually associated with gastric or duodenal ulcer, although some of the cases are difficult to differentiate from this condition. There is no fixed point of tenderness. Fermentative disturbances with belching of gas are frequent. Heavy, rich foods, pastries etc., cause the most trouble. Taking of a laxative usually gives prompt relief. The gastric findings after an Ewald meal are usually about normal. Hyper- or sub-acidity may exist. In some of the cases an ill-defined nausea is present and is occasionally persistent. These patients lose slowly but persistently in weight. They take less food than the body requires to maintain weight. If they eat when overly tired or under nervous excitement the gastric symptoms are worse. There is a lack of objective findings. In some of the cases there is a general ill-defined abdominal tenderness without other objective findings in the abdomen. A small percentage of these undoubtedly have tuberculous lesions

of the appendix, omentum, mesentery or other abdominal or pelvic organs as an occasional abdominal section will show. The chief characteristic of this group of cases is the ill-defined nature of the abdominal complaint not fitting in well with a diagnosis as applied to disease of any one of the organs to which one ordinarily looks for the production of abdominal symptoms, namely, the appendix, gall-bladder, pancreas, stomach or duodenum.

These cases form a very important group and while many symptoms indicating nervous and physical exhaustion are present in these individuals, the attention of the patient and the physician is usually focused upon the abdomen and unless a very careful study of the case is made, surgery is too often resorted to in the attempt to clear up the diagnosis and apply what is thought to be rational therapeutics. It is not well enough understood by the profession that ill-defined distress in the abdomen, especially in a young person, always calls for a very thorough examination for the presence of a tuberculous lesion, outside of, as well as within the abdomen. This has been dwelt upon again and again by the older writers on the subject but is still a fact too often forgotten by clinicians. Just what percentage of these persons actually harbor a tuberculous lesion in the abdominal organs cannot be answered, since in applying the tuberculin test in these individuals one often has no accurate knowledge of the location of the disease. One only knows that tuberculosis exists and in an active form. My own belief is, that a large percentage of these patients in this class are suffering from malsecretions or circulatory disturbances in the stomach caused by a chronic tuberculous toxaemia, the lesion being located in the lungs, mediastinal lymph glands or pleurae. No doubt the poor state of nutrition which we find in many may serve as a causal factor for the symptoms of which they complain.

In some of these cases the diagnosis of mucous colitis is made because of the appearance of mucus in the stools. I have not been able to demonstrate in any of these, tubercle bacilli in the stools or lesions in the bowel, and while it is possible that some of the cases may have tuberculous lesions in the intestines or appendix which may explain the presence of the mucus, I am inclined to think that the origin of the mucus is from the stomach. The tuberculin reaction in this group of cases, or in any of the groups here described, does not aggravate the symptoms but on the other hand the patients do wonderfully well after a well marked reaction to the tuberculin.

About 15 per cent of the cases fall easily into what might be called the "chest pain" group. This is a very important type of tuberculous infection. You are all familiar with the large percentage of healed and latent forms of tuberculous pleuritis which are encountered at autopsy. Have you ever stopped to think what a large number of persons there are who go about through life carrying these tuberculous infections of the pleura, many of them never consulting a physician, or if they do, an all too careless examination fails to reveal evidence of pleuritis, and the diagnosis of neurasthenia, intercostal neuralgia, intercostal neuritis, intercostal myalgia or myositis, etc., has been made?

The chest pains are usually of long duration, extending over as many as ten or fifteen or more years. In fact, they are characterized by their persistence. They keep recurring in winter and spring when the vital resistance of the patient is low. The locations of the pain are very varied and often are referred far from the seat of the lesion. Some of them are referred to the mid-sternum, a considerable group into the scapula or into the upper or lower back or directly to the spine itself or to the right or left shoulder, down the arm, into the neck or into the upper abdomen. Some of those referred into the lower abdomen are undoubtedly from the diaphragmatic pleura or the lateral pleura close to the diaphragm. They are notorious also for their mobility. At one visit the patient may complain of pain in one side of the chest and at the next visit in the other side. Sometimes at the base and again in the upper part of the chest. Many times a dry pleural friction rub can be heard if one is careful to examine all parts of the pleurae, tucked away in some unsuspected area, either at the apex or base. In many no friction rub can be heard, or it may be present at one examination and absent at another. When present it comes out best on deep inspiration and if one is not careful it is easily overlooked. The fine friction rub is often lim-

ited in extent and may not cover an area larger than a dollar or the palm of one's hand. Cough or deep breathing may or may not aggravate it. Exercise, if violent or prolonged, will often increase the chest pain. Many of the dull backaches, high up, in both men and women, of long standing, which come and go, are due to these dry forms of pleuritis with referred pains into the spine. Many of the ill-defined neckaches which so-called neurotic women complain of are undoubtedly referred pains from forms of tuberculous pleurisy localized in small patches in the upper part of the chest, oftentimes in the extreme apex.

Only within the last month I have had under observation a patient with a basal pleuritis, who, for the last fifteen years has been complaining of pain in the lower chest and upper abdomen. The abdomen of this patient has been opened four times with the diagnosis of some intra-abdominal lesion but without relief, the same old pain persisting. I have not the slightest doubt but that all of this woman's pain is a reflected pain from a tuberculous pleurisy, involving the pleurae on both sides and the diaphragm as well. I cannot lay too great emphasis upon this symptom type of concealed tuberculosis. Not all of these pleurisies are tuberculous in origin. The streptococcus probably plays a role in the etiology of a considerable percentage of them. I have quite a number that have not reacted to tuberculin.

In about 18 per cent of the cases the chief symptoms complained of by the patients were those of physical and nervous exhaustion. This symptomatic type I have emphasized in a former paper presented before the American Medical Association in June, 1914. The individuals of this group present a confused syndrome of symptoms out of harmony with any well defined clinical picture. So varied are their complaints that the clinician is baffled in his attempt to interpret them in the light of the well established symptomatic pictures with which he is familiar. These patients feel tired all of the time. The condition might well be called "The Tired Sickness." This feeling of exhaustion is complained of more in the morning and early part of the day. Most of these patients cannot get enough sleep. A small percentage of them have insomnia. Every added exertion, slight worry, increase of responsibility, sickness in the family, entertainment of guests and unusual demands of all sorts upon their strength only add to this feeling of exhaustion. These are the patients that give the history of nervous breakdowns beginning oftentimes in childhood resulting in the patient being taken out of school for rest only to return and have the experience repeated oftentimes again and again. Many of them, in adult life, while in college, break down and finally are compelled to give up their college training. Teachers and stenographers, bookkeepers and persons occupied in indoor work, under high strain, make up a large part of this group. These individuals spur themselves up to do their assigned work or tasks only to lapse into states of exhaustion and must rest to recuperate their physical and nervous reserve. They suffer much from backache, indigestion, headache, constipation, cold hands and feet, states of mental depression, crying spells, neckache, exhaustion under mental effort, eyeache, dysmenorrhoea, insomnia, dizzy or fainting spells and air hunger. They are chronic complainers and real sufferers. Many of these cases are in children. Parents will bring the child stating that they do not know what is the matter but the boy or girl seems tired all the time. They lack strength and endurance, play out easily at school and if they are put to work they lack physical stamina and often lose their position, not because they are not bright and active and willing, but because their vital force is sapped by a tuberculous toxaemia. Many of these patients are young women who have been operated upon for pelvic displacements, ovarian disease, chronic appendicitis, ulcer of the stomach, chronic constipation and abdominal adhesions. They progressively lose weight and live in a state of under-nutrition. It is possible that many of their symptoms are due to a sub-nourished state. The loss in weight is usually slow and progressive. They feel best when they weigh most. Some of them have a slight clearing of the throat or a little cough when tired or exhausted. Spells of weakness or faintness are frequently complained of especially when the stomach is empty. Many of them give a history of exposure to tuberculosis in childhood, usually a father or mother having the disease.

In connection with this group I wish to speak of a peculiar type of case, the chief symptom of which is air hunger or the tendency of the patient to take deep breaths. These patients are usually referred as cases of hysteria because no rational explanation can be found for the tendency which the patient has to take deep breaths and get more air into the lungs. They present a very striking picture. Every third or fourth breath the patient takes a very deep, full breath, using all excessory muscles to fill the lungs with air. Searching examinations of these patients have failed to reveal any organic disease outside of the presence of a tuberculous lesion as revealed by a subcutaneous tuberculin test. The majority of the patients in the exhaustion group possess a high natural resistance, otherwise there would be less so-called neurasthenia and more tuberculosis. Only a small percentage of them present physical signs of an active tuberculosis and then only after long years of suffering from the symptoms of physical and nervous exhaustion. Many of these women are weak, nervous creatures going from one clinician to another, who, on account of the negative physical findings make a diagnosis of neurasthenia, nervous exhaustion, psychasthenia, etc. A careful study of the case may reveal abnormal physical findings usually too ill-defined to correctly interpret the disease. The diagnosis is made by subjecting the patient to the specific test. These cases are common and they should be diagnosed and treated as tuberculosis rather than some form of nervous exhaustion.

A small percentage, namely, 5 per cent, fall into a group which I have designated the "mal-nutrition" group. The chief and important complaint is a slow, gradual and progressive loss in weight with usually an associated loss in strength without any assignable cause so far as the patient is able to determine. Most of these patients are usually from fifteen to twenty-five pounds under weight. They have no pain, no cough. Many of them complain of gastric disturbances of one kind or another, which, however, do not dominate the picture and are usually only elicited by questioning. A certain percentage of this group are people of large frame and fairly broad chests and rather stock build. The pulse is not particularly fast and the symptoms of malnutrition and progressive loss in weight dominate the picture. Physical examination of these patients is usually negative for organic disease and the diagnosis can only be made by the application of the subcutaneous tuberculin test.

Another small group of cases, 5 per cent, complain of a persistent pain in the back, low down over the lumbar region, either on both sides or upon the right or left side. Ill-defined tenderness and some hyperaesthesia of the skin is occasionally complained of in the region of the pain. The pain occasionally radiates down along the course of the ureter and into the bladder. Frequent micturition is often an associated symptom. Some of the cases have nocturnal urination. Severe attacks of pain resembling mild renal colic are complained of by some of the patients. The urine is, for the most part, negative except that a few pus cells or occasionally blood cells may be found. Tubercle bacilli may be found in the urine. In this group of cases the pain in the lower back is probably an expression of an early renal tuberculosis, either unilateral or bilateral. Some of these patients have later developed tubercle bacilli in the urine with pyuria and haematuria.

I have endeavored to study in a symptomatic way a series of 163 cases of tuberculous infections of the concealed form. In the study of the complaints described by these patients we have the advantage, through the tuberculin test, of the accurate knowledge which it furnishes concerning the existence of a known tuberculous lesion. There is no guesswork, because I do not think anyone would be foolish enough to deny that a positive reaction to a subcutaneous test means an active tuberculous lesion in the individual giving such a reaction. We have also the advantage of studying this group of patients at a time in the course of the disease when it was not possible to establish the diagnosis of tuberculosis by means other than by the use of the specific test.

I feel, therefore, that possibly a broader viewpoint of the whole symptomatology of this extremely common infection has been presented. While our knowledge of heretofore described symptoms of tuberculosis has not in any way been broadened, it has been pressed home upon the writer, and I hope upon those who have listened to the reading of the paper, that

the interpretation of a large number of the ill-defined aches and pains and abnormal states of nutrition which present themselves to the clinician in such baffling variety, cannot be accurately made and the best interests of the patients subserved unless the clinician is willing to apply the knowledge which is furnished him by a test which is as specific for tuberculosis as the Wassermann test is for lues.

A normal individual, sound of body, lives out his life unconscious of the working of his internal machinery. Complaints or abnormal sensations are usually indicative of disease processes of one kind or another provided our knowledge is sufficiently complete to detect the presence of the lesion. It may not always be possible for us to know the special organ in which the disease is located, indeed it may not be necessary for us to know this. In most of these individuals forming the subject of this paper it was sufficient to know that an infection with the tubercle bacillus existed in order to map out a proper course of living, not only with relation to the work done and the food eaten, but also the hours of recreation and of sleep. Most of these persons can be brought back to a state of normal health by judicious management.

Until the profession has secured more specific medication for the healing of this widespread and very common infection, the valuable help which the clinician can give to the patient rests largely in the recognition of the disease process with certainty, so soon as the patient begins to have complaints and presents himself for examination. These patients ask for the bread of health, let us not in our diagnostic carelessness give them the stone of chronic invalidism.

DISCUSSION

DR. E. T. F. RICHARDS, St. Paul: I was very much interested in Dr. Head's excellent paper. The great war has brought to light a tremendous number of active cases of tuberculosis that were admitted into the army without being spotted. For this there is no excuse. It probably means hasty and indifferent examinations. On the other hand, there have been a very large number of cases with pulmonary tuberculosis which, when examined for the army, were latent—entirely without physical signs—but which under the strain of trench warfare developed into active, progressive cases. It is very doubtful if any of these latter cases could have been weeded out on their first examination even with the most searching care. This serves [illegible] in great need of a diagnostic method which will enable us to detect the latent case, the case which is negative on careful physical examination and for the most part gives a negative detailed history. The careful interpretation of correctly made stereoscopic X-ray plates, as pointed out by Dr. F. S. Bissell and myself a few years ago in the American Journal of Roentgenology, together with the proper use of, and correct interpretation of, the subcutaneous tuberculin test, as Dr. Head has so repeatedly emphasized, will undoubtedly enable us to detect a very large number of the so-called latent cases which now go unrecognized. Time, careful attention to detail, correct technic, correct interpretation, and experience, are the elements which mean everything in the detection of the concealed type of tuberculosis.

We have seen in this morning's session from the papers of Dr. Tuohy and myself that the war has forced upon us a new term, that of "neuro-circulatory asthenia." This signifies that we cannot be entirely dependent upon infection for the cause of a varied or "neurasthenic" symptomatology. It is quite true that even in a considerable number of neuro-circulatory asthenics, foci of infection can be demonstrated, and upon eradication of these, improvement perceptibly follows. It is quite possible that post-mortem examinations in asthenics, as in others, will show healed tuberculous foci of the lungs or glands. We would, however, have no proof for attributing all the symptomatology exhibited to such foci. In other words, although we can place a great many individuals who show a varied symptomatology (in which fatigue is the most dominant) into one group where the underlying cause of their ill health is a focus of infection, whether that be a tuberculous concealed focus as Dr. Head has described or a hidden infection around the root of a tooth demonstrated only by the X-ray, yet we must also accept another large group, typified by the neuro-circulatory, which is covered only by the term "asthenia," the underlying factors in which being most probably congenital deficiencies.

DR. C. L. GREENE, St. Paul: I think, Mr. Chairman, that Dr. Head's paper is one of extreme value. He and I have always disagreed as to the value of the tuberculin reaction, so we need not discuss that.

But it seems to me that the moment that one gets into his mind the conception of congenital asthenia, you find the foundation of pretty much all we have been talking about today.

We have to go back to the original description of that physical fact as given I think in 1907—I have forgotten the exact date,—by Stillwell.

Among other things, without attempting to describe it anew, he laid, as I recall, great stress upon the fact that those of the congenitally asthenic type—and they are also of the visceroptotic type, the low lying stomach heart and so on—were peculiarly liable to infection and peculiarly susceptible to tuberculous infection. There can be no doubt about that. It is the most fertile soil for the implantation of the tubercle bacillus.

During the past eight or nine years it has been our custom, in my own office, to X-ray all patients as a part of the routine examination, and in line with what Dr. Richards has just said—and he knows it from his own

experience when in my office—we found in that type of cases an astonishingly large percentage of tuberculous lesions, although that percentage would be changed very much in the office of a man dealing with tuberculous cases to a larger extent than I do. Any man specializing in tuberculous cases and getting a good many active cases would find much more of that type.

It has been, I think, sufficiently established in the last few years especially, that this congenitally asthenic type is seen in families as the primary and original type, but such children acquire tuberculous infection much more easily than others. I think Dr. Head has done us a great favor in laying stress upon the symptomatology of the group. I am not, of course, willing to say that I think those symptom groups are peculiarly tuberculous, and I do not understand him to say that, because as a matter fact they occur in many conditions, and certain of them, especially the fatigue condition which he speaks of, are very common in soldier's heart, which, as I regard it, is best described by a term used in 1904 by Hartshorne. He called it "heart exhaustion," because these soldiers' hearts are not irritable hearts at all, but they are hearts which do not stand exertion well, in which the reserve strength is not good.

There was one item, if I may be permitted to speak of it, to which we have all paid too little attention in the discussion, and that is the question of nutrition. In the case of many of these small and poor hearts, or exhausted hearts or insufficient hearts of that type, in all the congenitally asthenic individuals, the state of nutrition is paramount. They are peculiarly unstable. They lose weight readily.Sometimes even under slight infection or under s ight overstrain and so on; and the first thing I have in mind in my cases is to raise the nutritional level, and in respect to the heart, to avoid in every possible way giving the patient the impression that he has heart trouble. I was glad to hear that emphasized today. Lewis and McKenzie, and all who are dealing with soldiers' hearts emphasize the fact that you should not let the individual have the idea that he has heart trouble. It is not necessary. It can be put to him in other ways.

I will say just one thing about neurasthenia. I disagree with Dr. Plummer, perhaps not as much as might appear, because as I understand it he merely wants to retain the term. But when we use the term neurasthenia, whatever it may be, I think that that is the weak point about neurasthenia. It has never been a proper definition, and every month that passes and every year that goes by robs it of its most cherished use. They are going one by one. This congenitally asthenic type is the type which furnishes the greater number of neurasthenic cases.

I have said for many years, and I believe today that the existence of neurasthenia as a medical entity is a distinct damage to the profession of medicine, because it constitutes a standing temptation to make the easiest possible diagnosis in a doubtful case, and it pleased me very much to read in the writings of one of our most advanced neurologists not long ago, practically the same statement that I make to you at this time.

DR. JOHN J. McGROARTY, Easton: Tuberculosis in some form or other is one of the problems which confronts every physician and surgeon and no physician can do justice to his patients or to himself, unless he is able to diagnose tuberculosis in its early stages.

There is urgent need for the medical profession at the present time to formulate diagnostic methods, whereby the early diagnosis of tuberculosis can be made.

The public are awakening to the need of the early diagnosis of tuberculosis, and rightly so, because the patient's health and often his life depends on the advice given by the physician at this time.

I wish to make this statement that during the past ten years, we have been finding out more definitely that many of the conditions which we called asthenia and neurasthenia have, with the advancement of medical science, been shown to be due to some particular infection.

If we wish to eliminate a great many cases of tuberculosis or rather, if we wish to have a smaller number of cases of tuberculosis, we must make our diagnosis earlier.

It is appalling to see the number of cases right here in Minnesota who die every year with tuberculosis.

If we wait until they have all the symptoms, for example, dullness on percussion over one or more lobes, bronchial breathing over one or more lobes, breathing faint, suppressed, or absent over any lobe or lung, crackling rales present and with the sputum positive, etc., before we make a diagnosis of tuberculosis, I really believe we are going to lose a great many cases.

We have a certain number of cases—a great many in fact—where we can examine the lungs both physically and by means of the X-ray and find absolutely nothing.

The point I wish to lay particular stress on is this, that whenever you have a patient who gives a history of a gradual general deterioration, going down little by little and you can find positively no lesion in the body without any temperature or with moderate fever, you should bear constantly in mind, the possibility of tuberculosis and the first question you should ask yourself is, is this the initial stage of a tuberculosis?

We know that in most all cases that this gradual deterioration of the patient takes place long before the local condition manifests itself either in the lungs, kidneys or any other part of the body; or in other words, the primary manifestation of all tuberculous lesions is usually the constitutional condition of the patient, preceding by many months the local manifestations. This is so uniform and so common an occurence and yet it is so erroneously diagnosed as asthenia, neurasthenia, biliousness, etc., for months and months before the local lesion in the kidney is recognized; before the local lesion in the bladder is recognized; before the local lesion in the epididymis is recognized; before the local lesion in a bone or joint is recognized; before the local lesion in the peritoneum, or before the local lesion in the lung is recognized.

The early diagnosis of pulmonary tuberculosis, or rather lesions of tuberculosis, is no easy task; it takes time (sometimes months) and thoroughness to make a diagnosis.

DR. GEORGE D. HEAD (closing the discussion:) I appreciate Dr. Plummer's opinion about the matter of retaining the term "neurasthenia."

The difficulty with this at the present time is our entire ignorance of what we mean by neurasthenia, our entire ignorance of the pathology that lies behind it; and if we are to retain the term at all, we ought to see it with some notion of what we mean pathologically by its use.

I do not doubt at all but that many cases, Doctor, which you might call neurasthenia or congenital asthenia, are really congenital or acquired lues, and that there are spirochetes somewhere in the body, either in the heart muscle, liver, brain or in some of the other organs. I have no doubt at all from my own conception of the condition, that many cases which you might classify as neurasthenia, are really cases of chronic tuberculosis, the toxin being absorbed from a small latent focus somewhere in the body, and being distributed into the blood stream under severe exertion or unusual strain or the approach of certain periods of life, when the individual has been put under special strain,

I have no objection to the use of the term neurasthenia, but the use as Dr. Greene says of a conception, a clinical conception, of neurasthenia aside from an etiology or a pathology, is something, gentlemen, you are talking about which I am entirely ignorant of.

This does not apply only to tuberculosis. We have the neurasthenic type in cardiac disease, we have it in syphilis, we have it in gastric ulcer, in duodenal ulcer, we have the picture in a variety of pathological conditions; but for heaven's sake let us not dignify that as a disease, and go on as a profession diagnosing neurasthenia, neurasthenia, neurasthenia, until my heart aches, when I hear the use of that term.

DR. TUOHY: Cardiac neurasthenia?

DR. HEAD: Possibly so, but let us remember that tuberculosis is like syphilis. It is very common. When we see people breaking down, young people particularly, and children,—and in answering Dr. Richards' question I should say that the general consensus of opinion now, Doctor, is that the vast majority of persons are infected in childhood. Any man who deals with tuberculosis knows that in the families of these individuals he can trace right along in the children the histories of infection from the mother or the father or brother or sister, away back 10 or 15 years before they have developed the active lesions. Why, it is a regular thing in my work in the office,—I would say in 90 per cent of our cases of persons who show active tuberculosis, we get the history of infection back in childhood. I do not believe that is any longer a mooted question, Dr. Richards, and I do not believe that you do, but I think you asked the question to bring the point out.

But the point I want to make is this, and I do not want to be misunderstood by Dr. Plummer or anyone else, but I do disagree with him. Let us drop this term "neurasthenia," as a clinical entity, so far as diagnosis is concerned. We can call it a neurasthenic state or a state of exhaustion, not a disease entity, not a diagnosis. Because if you have a boy or girl or young man or young woman, with a concealed tuberculosis lesion, when that individual comes to you with the complaints which I have emphasized today, do not turn them away and say, "Oh, you are neurasthenic. You are congenitally weak; we cannot do anything for you. You will always be that way." If that person harbors latent tuberculosis, treat them for their tuberculosis. If they harbor congenital lues, treat them for their lues; if they have a latent ulcer, cure it; get them well. I am sure you will find that this method of dealing with so-called neurasthenia in the practice of your profession will give you a lot of satisfaction.

THE TREATMENT OF MENORRHAGIA WITH RADIUM.*

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Menorrhagia occurs more often at the beginning and at the ending of the menstrual function. It is seldom that the profuse menstrutation of the first decade of menstruation is due to a demonstrable lesion, but rather to defective uterine musculature or, more probably, to a disturbance in the balance of the internal secretions. The inter-relationship of the functioning of the glands of internal secretion opens up a most interesting field for study. The secretions of the adrenal medulla and the thyroid have been studied quantitatively because the active constituents of these two glands have been separated as pure chemical compounds.[6] That the other ductless glands also furnish secretions which contain physiologically active substances is undoubtedly true, but as yet these secretions have not been isolated in a form in which they can be studied quantitatively and their exact action determined.

The menorrhagias of the second and third decades may occur, with no gross lesions apparent, in cases of polypoid endometritis and sometimes as a result of passive congestion in a retroverted or a prolapsed uterus, or, occasionally, as a result of chronic pelvic infection; but the most frequent cause of hemorrhage at this period is the presence of a uterine myoma, of polypi, or of carcinoma.

Hypertrophic endometritis is not now considered a definite pathologic condition of the

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endometrium, but a normal physiologic congestion in the menstrual cycle.[3]

The management of the profuse menstruation in those cases in which no gross lesion is found, or in cases in which a small myoma exists, has not in the past, been especially satisfactory. In some instances, young persons respond to glandular medication, such as ovarian and thyroid extract, and pituitrin. A few patients have improved after blood transfusion, and following the use of horse-serum, but the effect, as a rule, has been that of temporary relief only. Curettement is seldom effective and should be tried only after medical treatment has failed. This type of menorrhagia, in older persons, has usually been treated by local medication and repeated curettements.

In many of the cases in which a small myoma is found, the conservative surgeon hesitates to submit the patient to so radical a procedure as a hysterectomy, or even to a myomectomy.

The work of Wickham showed that the beta and gamma rays of radium produced an endarteritis, which goes on to the obliteration of the blood vessels. This fact led Abbe, in 1905, to make the first application of radium within the uterine cavity to control bleeding in a case of fibroids in a patient 49 years of age. The effect of the gamma rays on the ovarian tissue is still a contested point. Horowitz has shown, experimentally, that in two to three days following exposure to the X-ray and to the gamma rays of radium, the nuclei of the mature graafian follicles break down, and in ten days the follicle is almost entirely destroyed, thus preventing the development in the corpus luteum. Kelly and Burnam consider that the decrease in the size of the fibroids and the cessation of the hemorrhage are due to the anemia following the obliteration of the blood vessels. They cite cases in which fibroids have appeared after the menopause, or after the removal of the ovaries. They also report two cases in their series in which the fibroids disappeared without cessation of menstruation.

Radium was first used in the Mayo Clinic about three years ago (1915) in the treatment of menorrhagia of the menopause, in cases which presented no gross pelvic lesion, and in those presenting a fibroid but with contra-indication to operation. Since then the types of cases treated have been increased, and now radium is considered the treatment of choice in all cases of the menorrhagia of menopause in which the presence of carcinoma is definitely excluded, either by history or by a diagnostic curettement, and in those cases not presenting a large, soft myoma which is apt to later undergo degeneration. The radium is also used in cases of profuse menstruation of the young woman (1) when there is a small submucous fibroid, (2) when no gross pathologic condition is demonstrable, and (3) in cases presenting a large myoma in which there is a definite surgical risk.

However, we have not entirely replaced myomectomy with radium for the treatment of myomas in the patients between the ages of 30 and 40 years. In a series of 510 abdominal myomectomies for uterine myomas done in the Mayo Clinic from January, 1898 to January, 1918, there have occurred 23 full-term pregnancies, and 1 miscarriage. Seven women were pregnant at the time of answering the questionaire, making a total of 31 (12.3 per cent) pregnancies occuring after myomectomy. I have found in the literature but one case of pregnancy going to full term following radium treatment and in our series there was one case of miscarriage with a dead fetus at seven months. Therefore, in most cases of myoma during the child-bearing period, myomectomy is the procedure of choice.

Of the 175 patients that were treated with radium from August, 1915 to December, 1917, there were 2 under 20 years of age (1 was 15). There were 34 from 21 to 30 years; 45 from 31 to 40; 91 from 41 to 50; and 14 were more than 50 years of age. Of this number, 93 had had previous curettements, 37 had had more than one curettement, and 56 had undergone other pelvic operations. In 69 cases there were complications that were considered as relative, though not in every instance absolute contra-indications to operation. There were heart lesions in 34 cases, hypertension in 8, kidney lesions in 11, obesity in 8, and pulmonary tuberculosis in 6. Hyperthyroidism occurred in 2 cases. Seventy-seven of the 175 patients had definitely palpable fibroids. In 82 instances the uterus was classified as "large" and in 45 it was definitely stated that the uterus was not large. It is interesting to note that 155 of the 175 patients were married women, and that of these only 25 had not been pregnant.

TREATMENT

The technic used by us is similar to that in use elsewhere. The patient is given a cleansing douche, the cervix is drawn down by a tenaculum forceps, swabbed with tincture of iodine and gently dilated, and the radium is inserted into the uterine canal. The radium element is encased in a glass tube within a silver tube 0.5 mm. thick, and this, in turn, is enclosed in a rubber tube 0.5 mm. in thickness. This screening is sufficient to filter out the alpha and the soft beta rays which produce the local irritation. A narrow strip of plain gauze is carried into the cervix and the vagina is packed.

The patient is allowed to leave the hospital a few hours after the radium is removed. She keeps off her feet for the following twenty-four hours. If there has been a recent hemorrhage, or if the treatment is given during the menstrual flow, the patient remains in bed until the flow ceases. Usually the flow at the first period after the treatment is as profuse as usual, or it may be increased in amount. The reason for this is not definitely known. It may be because of the local hyperemia of the endometrium, produced by the beta rays, or it may be due to the liberation of the ovarian hormone by the destruction of the corpora lutea.[2]

In the majority of patients more than 45 years of age, and in all in which there is intermenstrual bleeding, a diagnostic curettement is done previous to the radium treatment. If the clinical history is at all suggestive of a carcinoma of the fundus, a hysterectomy is done, for even a very thorough curettement may fail to reveal a carcinomatous focus.

The dosage of radium is gauged by the age of the patient, and by the presence or absence of a tumor. In the young person without a demonstrable tumor, and when it is desirable to continue menstruation, usually one application of 50 mg. of radium element for from four to six hours (200 to 300 mg. hours radium) is used. In older persons in whom it is desirable entirely to stop menstruation, it has been found that an exposure of 50 mg. for from ten to twelve hours has brought about the desired results. In cases in which large dosage is used, menstruation is usually irregular for about two months and ceases entirely after the second or third month; following the lighter exposures it becomes regular and normal in most instances in about two months. It is our custom not to repeat the treatment until an interval of three months has elapsed. If, after that time, menorrhagia continues, a second treatment is given, and, with the exception of one case, the second treatment has been effective. In this instance menstruation ceased for one year, and then became profuse and the periods prolonged. It has been necessary to give a second treatment in 10 instances, in this series. In 8 instances a hysterectomy was done later; 1 elsewhere one month after the radium treatment. One only of these 8 patients had been given a second radium treatment.

Included in this series, is one case of adenomyoma of the uterus, in which a microscopic diagnosis was made at the time of the exploratory incision. There were one intrauterine treatment and four abdominal treatments with entire disappearance of the tumor, which at the time of the exploration was the size of a grape fruit and adherent in the pelvis. At the last examination the uterus was the size of the thumb.

Reports have been received from 143 of the 175 patients and in 55 (38.5 per cent) menstruation had ceased, not to return to the date of the report; in only 14 did the menstruation cease immediately following the treatment. In 15 menstruation ceased for three months and returned; in 29 (20.2 per cent) the menstruation became normal; in 42 it was reported as regular but somewhat profuse, and in 30 (20.9 per cent) it became profuse. Ninety-two patients report their condition as improved, and 27 as not improved. Two died, and in one of these cases the physician reported that the death was clinically due to carcinoma before treatment. There had been negative curettement. The second died of pulmonary tuberculosis which existed at the time of the treatment.

CONCLUSIONS.

Radium is the treatment of choice in:

1. Cases of menorrhagia of menopause not associated with large fibroid tumors, and in which the possibility of carcinoma is definitely eliminated.

2. Cases of menorrhagia in patients between the ages of 35 and 40 years, who have small submucous fibroid tumors, or who have on demonstrable lesions.

3. Cases of myomas in which there is a definite contra-indication to operation.

4. Cases of menorrhagia in the young person, who has resisted all medical treatment, in which very small dosage should be given.

REFERENCES.

1. Abbe, R.: Uterine Fibroids, Menorrhagia and Radium. Med. Rec., 1915, lxxxvii, 380-381.
2. Corscaden, J. A.: The Rationale of Radio-therapy in Uterine Hemorrhage. Am. Jour. Obst., 1918, lxxxvii, 250-272.
3. Graves, W. P.: Gynecology. Philadelphia, Saunders, 1916, p. 207.
4. Horowitz: Quoted by Colwell, H. A. and Russ. S.: Radium, X-ray and the living Cell. London, Bell, 1915, p. 253.
5. Kelly, H. A. and Burnam, C. F.: Radium in the Treatment of Uterine Hemorrhage and Fibroid Tumors. Jour. Am. Med. Assn., 1914, lxiii, 622-628.
6. Kendall, E. C.: Studies of the Active Constituent, in Crystalline Form of the Thyroid. Tr. Assn. Am. Phys., 1916, xxxi, 134-145.
7. Wickham, L. and Degrais: Radiumtherapy. New York, Funk and Wagnalls, 1910, 84-86.

DISCUSSION

DR. W. E. SISTRUNK, Rochester: For several years we have been watching very carefully the patients with menorrhagia who have been treated with radium, and it is very interesting to-night to obtain from Dr. Stacy a report of the results obtained in that group of cases. We all see patients with menorrhagia in whom we are unable to recognize the cause of the excessive bleeding, and we frequently fail to relieve such patients by any treatment; that is, by medical treatment, curettements, hysterotomy, and so on, and in many such instances it becomes necessary, in order to restore the patient to health, to do a hysterectomy.

We were cautious in the beginning of our use of radium because a good many of the men who had used it early had brought about a permanent cessation of menstruation in patients in whom it had been used. Dr. Stacy has shown us that in radium we not only have an agent which in a large percentage of cases will give good results, but also that we may use this substance without the fear of producing an artificial menopause, and this is particularly so in the cases where it is judiciously used.

It seems quite probable that the use of radium in gynecological work will be extended. A great many practitioners are using it in patients with fibroid tumors of considerable size. We have always felt that if a fibroid was very large in size it would be necessary to stop menstruation in order to make the growth disappear or to markedly diminish the size of the tumor, and we have felt that when menstruation was stopped by radium there would also be cessation of the ovarian function. For this reason we have felt it would be better to do a sub-total hysterectomy in such cases on account of the fact that both ovaries could be preserved. We have always felt that a woman still in the child-bearing age could go through her age much better with her ovaries preserved than if they were removed.

Of late, we have been treating an increasing number of patients with fibroid tumors of the uterus with radium, and I believe the time will come when we will use repeated small doses of radium in many patients with small fibroids, and especially so in the ones in whom the fibroids are producing no symptoms. In the patients around the menopause with menorrhagia, radium has acted as a specific. When one can rule out malignacy by a curettage, one large dose of radium within a short time stops menstruation and the bleeding.

To go a little farther, in cases of inoperable cancer of the cervix we have secured far better results from the use of radium than for any operative measure. We have, until the last year or two, used heat in large quantities, in accordance with the Percy idea in such patients, but at the present time we have discarded this method because radium is simpler, easier to use, produces very little discomfort to the patient, and the results following its use are as good if not better than those obtained by the Percy method.

Dr. Stacy's paper is exceedingly interesting because it makes us feel that we can use radium with less fear than we did in the past, and that in a high percentage of cases we will be able to get good results in patients with menorrhagia in whom no pathological condition can be demonstrated in the uterus or in the pelvis.

DR. EUGENE K. GREEN, Minneapolis: In the absence of Dr. J. W. Little, who has used radium for the last 1½ years in the treatment of fibroid tumors of the uterus at the Hill Crest hospital, I would like to ask Dr. Stacy a question which I think will bring out a point of interest for those who use radium, and that is, in regard to using a much larger dose than she gives. The cases that have been treated by Dr. Little are largely those of the nonoperative type. These patients came into the hospital in bad shape, with large fibroids, and very much run down physically. They have been poor risks for operation, and one would hardly know what to do otherwise than use radium. In most of these cases he has used as much as 90 milligrams extending over 24 hours. Aside from a slight reaction following the use in such large doses, there have been no ill results, and I would like to know what Dr. Stacy thinks of giving the larger dose than she has mentioned.

With regard to a reaction in the size of the tumor Dr. Little had one case in particular with fibroids reaching nearly up to the umbilicus, and after radium treatment in the course of two or three months this tumor reached just above the symphysis and the patient felt very much better and greatly improved physically.

He has had no bad results from the use of large doses. He makes a great point in the treatment of these cases by such a conservative method. So frequently they are poor risks from the standpoint of surgery, but with the use of radium there is practically no risk.

Another point he makes in the treatment by radium is that it allows these patients to get up and go about. For instance, he has treated a number of school teachers who have presented themselves with fibroids. They come in, say on Saturday, receive their treatment and go back to work on Monday. They seem to have no discomfort or trouble following its use.

From the report of the cases he has been treating since January 1, 1917, it looks as though radium has come to stay and that there is a distinct place for it in the practice of surgery.

SMALLPOX, BENIGN AND VIRULENT, IN MINNESOTA

(An Extract from the Biennial Report, 1916-17).

MINNESOTA STATE BOARD OF HEALTH
Division of Preventable Diseases
A. J. CHESLEY, M. D., Director

Smallpox reports for the past five years are shown in the following table:

TABLE I
SMALLPOX IN MINNESOTA, 1913-1917

Year	Reported Cases	Deaths	Vaccination History		
			A	B	C and D
1913	2867	7	47	191	2628
1914	1847	7	18	99	1730
1915	1708	5	28	90	1590
1916	1270	1	23	63	1184
1917	2718	20	45	170	2503
5 yrs.	10,410	40	161	613	9635

The cases infected outside the state during 1916 and 1917 are given in Table II.

TABLE II
SMALLPOX DUE TO EXTRA-STATE INFECTION

Where Contracted	Number of Cases	
	1916	1917
Iowa	1	3
Kansas	0	1
Michigan	1	0
Montana	3	2*
Nebraska	0	2
North Dakota	2	5
South Dakota	0	5
Wisconsin	1	2
S. S. Kristianafjord	0	1
Total	8	21

*One case possibly contracted in North Dakota instead of Montana.

For the years 1913-1916, inclusive, smallpox was of mild type, fatal cases usually being very old persons, infants, pregnant women or chronic alcoholics. In 1916, in spite of the prevalence of the disease in many parts of the state, there were but three deaths.

A man aged 50, never vaccinated, a chronic alcoholic in very poor health when the smallpox developed, died February 27th in Minneapolis. A baby boy whose mother was sick with smallpox when he was born March 15th, died March 27th in Rochester. A woman aged 47, never vaccinated, who had a serious lesion of long standing, died in Brainerd, March 28th, four days after developing smallpox.

In 1917, an epidemic of virulent smallpox causing 17 deaths among 92 recorded cases, occurred. During this epidemic, there were also cases of the usual mild type, and the contrast between the benign and virulent types was very evident, supporting Dr. Chapin's contention that there are two distinct strains of smallpox varying only in their virulence.

The history of the introduction of the virulent smallpox into the United States is very interesting, since Massachusetts, New York and Minnesota were affected. The infection was brought in by immigrants exposed to a fatal case on the S. S. Kristianafjord between Norway and the United States.

The Massachusetts State Department of Health traced 48 cases, 10 of which were fatal, to infection carried to Worcester by an immigrant from this ship. Dr. Stanley H. Osborn, epidemiologist of Massachusetts State Department of Health, in report of the investigation states: "The virulence of the virus causing the disease was much greater than the smallpox that has been present in New England in the past few years. This virulence accounts for the 24 cases in vaccinated individuals. In spite of this increased virulence, there were but three deaths in the 24 vaccinated individuals." No information indicating that the tenth fatal case had been vaccinated could be obtained. A Finnish immigrant arrived at a boarding house in Worcester, January 4th. On January 16th, another Finn who lived in this boarding house became sick with smallpox, and the epidemic described in the Massachusetts report for 1917 followed.

Seven cases occurred in Watervliet, New York, through exposure to a case taken sick after visiting Worcester, Massachusetts, during the epidemic there.

The virulent infection first appeared in Minnesota at Eveleth following the arrival of three immigrants. These three Finns while enroute to Christiana, Norway, lost everything they had except the clothes they wore, through the sinking of their ship. At Christiana, they took steerage passage December 10th in S. S. Kristianafjord, arriving in New York, December 24, 1916. A case of smallpox developing on the steamer had been isolated five days prior to her arrival, so that individual contact of the majority of the passengers was relatively slight. Dr. L. E. Cofer, health officer of the port of New York, personally supervised the carrying out of precautions against the spread of smallpox. If the first vaccination was not successful, re-vaccination was done on the ninth day at Ellis Island, where all contacts were kept under observation. Ninety-six per cent of vaccinations were successful; 24 direct contacts were held until January 15th; 422 indirect contacts were held nine days. All were inspected daily and had temperature taken every afternoon.

The three immigrants left New York City January 2nd, for Eveleth, coming through without stop. On arrival they obtained room and board at O. K.'s house, and January 7th, one of the three, A. O., aged 22, began sleeping with L. K., a boy aged 12, never vaccinated. This boy developed smallpox January 20th. His uncle, J. K., aged 45, vaccinated when a child, was taken ill February 5th; removed to Isolation Hospital in charge of nurse, 1 P. M., February 15th, and died at midnight.

The only other case in the Isolation Hospital was Mrs. J. F., dying of tuberculosis. Her four children brought to see her before leaving to enter an orphanage in Duluth, spent the night of February 15th at the hospital on the same floor with the smallpox case, J. K., whose nurse used the same bath as the children. On February 16th, the children were taken to Duluth, without being vaccinated, and no notice of their exposure to smallpox was made to the Duluth health department or to the orphanage. Two of Mrs. J. F.'s children, J. F., m 11, and A. F., f 9, developed smallpox of the virulent type March 1st, and exposed 36 boys and 40 girls in the orphanage, before the nature of the disease was recognized. Soon after, vaccination was carried out, but too late to protect all the exposed. Evidently the infection was spread from the orphanage to a hospital in charge of the same sisterhood as the orphanage, by sisters or employees, and considerable exposure occurred before any precautions were taken or vaccination was considered necessary. In the orphanage, eleven severe cases, and one mild case occurred, with one death from confluent smallpox March 31st in a girl ten years old.

A few cases sick at Brainerd, Cloquet, Carlton and Rice Lake Township, were due to exposure in Duluth or Eveleth. A boy aged four and a girl aged seven, never vaccinated, developed virulent smallpox at Hibbing, March 26th and 27th, respectively.

The Rice Lake Township cases were most unfortunate. An eighteen year old girl employed in a laundry in Duluth developed an eruption June 9th; was admitted to the Isolation Hospital June 13th, as suspected smallpox. At this time 62 cases with 5 deaths had occurred in Duluth and every case with eruption was viewed with suspicion until a definite diagnosis could be made. June 15th, Dr. W. P. Green of the Division of Preventable Diseases, saw the patient and concurred in the diagnosis of chickenpox, which had been made that day. Unfortunately, the girl had been in a ward with smallpox cases. She was immediately vaccinated and later re-vaccinated twice, before being discharged June 22nd, when she went to her home in Rice Lake Township. July 2nd she developed smallpox. Her father had been vaccinated 35 years before. No one else in the family had been vaccinated. On July 10th, her mother, aged 35, and sister aged 4 months, developed prodromes, and July 11th, father aged 41, brother aged 10, two sisters aged 7, brother aged 4, and brother aged 2, developed prodromes. The mother, the father and 4 months old baby had hemorrhagic smallpox. July 31st, brother aged 12, and July 14, sister aged 13, which completes the family, were taken ill. All of these had confluent smallpox. The mother died July 26th, the baby July 18th, and the

TABLE III
CLASSIFICATION OF VIRULENT SMALLPOX CASES, 1917

	Class A	Class B	Class C	Class D	Total
Cases	12	10	62	8	92
Deaths	0	2	15	0	17

father July 25th; three deaths in this family of 11, all of whom had virulent smallpox. Vaccination of contacts and in the community in general was immediately carried out and no further spread occurred in Rice Lake Township from this family. Although outside of city limits, Dr. E. W. Fahey, health officer of Duluth, admitted as many cases as possible to the Duluth Isolation Hospital, since the home conditions were very inadequate for their care.

The virulent outbreak in Minnesota was not studied as carefully as the outbreak in Massachusetts, for the reason that the commissioner of health of Eveleth, where the first case occurred, reported February 20th that he had the outbreak under control, only two cases, one of which was fatal, having occurred. Smallpox in Minnesota, unlike other diseases which present greater emergencies, is not investigated unless there is a special reason for so doing. The state law forbids compulsory vaccination, without which it is impossible to eradicate smallpox. Investigations were made, however, by representatives of the Division of Preventable Diseases, in Eveleth, March 25th, June 18th; Duluth, March 27th, June 15th, June 21st, July 13th, and in suburbs of Duluth, July 17th; Carlton and Cloquet, which are near Duluth, July 23rd, and in Brainerd June 24th. Through these investigations, sufficient detailed information was obtained to show the source of the virulent infection and to explain its spread, which occurred because vaccination of contacts at Eveleth was not carried out, nor was the Duluth Health Department notified of the exposure when certain of the contacts left Eveleth to enter an orphanage in Duluth.

In all, there were 92 cases of virulent type, 17 of which terminated fatally, a fatality rate of 18.5 per cent. The vaccination status of these patients and a tabulation of the fatal cases are given in Tables III and IV.

Another very interesting point is that none of the three immigrants from New York City would admit having had any symptoms whatever, and at the time they were first examined by the Health Commissioner of Eveleth, they showed no signs of the disease. All information had to be secured through an interpreter. A. O., who is supposed to have had varioloid, since the 12 year old boy with whom he began sleeping January 7 developed smallpox January 20, had no old scar from vaccination and showed only a very faint scar from vaccination at Ellis Island. The other two im-

TABLE IV
TOTAL CASES SMALLPOX OF VIRULENT TYPE, 1917

Case	Sex	Age	First Symptoms	Death	Type	Vaccination Classification
J. K.	M	46	Feb. 5	Feb. 15	Virulent	B
C. P.	M	36	Mar. 4	Mar. 14	Virulent	C
C. E. F.	F	11	Mar. 24	Mar. 31	Virulent	C
M. S.	F	23	Apr. 16	Apr. 25	Hemorrhagic	C
M. F.	F	19	June 3	June 10	Hemorrhagic	C
C. D.	F	28	May 31	June 11	Virulent	C
G. W. M.	M	47	June 1	June 15	Confluent	C
M. L.	F	18	May 31	June 16	Confluent	C
M. A. D.	F	55	June 4	June 16	Virulent	C
M. McK.	F	68	June 17	June 21	Virulent	B
T. B. H.	M	1 Mo.	June 10	June 22	Virulent	C
S. W. B.	M	18	July 4	July 8	Hemorrhagic	C
E. F.	F	4 Mo.	July 10	July 18	Virulent	C
M. K.	F	22	June 16	July 18	Confluent	C
E. B.	F	10	July 12	July 20	Hemorrhagic	C
M. Fi.	M	39	July 11	July 24	Virulent	C
Mrs. M. Fi.	F	35	July 10	July 26	Virulent	C

A—Those who were successfully vaccinated within 7 years.
B—Those who were successfully vaccinated over 7 years ago.
C—Those who were never successfully vaccinated.
D—Those who have no definite history of vaccination.

migrants showed old scars, evidently from successful vaccinations, and faint scars from recent vaccination. These men, or at least so their remarks were interpreted, claimed that their clothing was not disinfected at Ellis Island, but this was shown by the records of Ellis Island to be an error. All the clothing and baggage was properly disinfected under the personal direction of Dr. Cofer, and there is no possibility of smallpox infection having been carried in any other manner than by A. C., and in his case, owing to the denial of symptoms, the question was raised: Are there well "carriers" of smallpox virus? This does not seem probable in view of the ease with which infection is usually traced from one smallpox case to another, yet no one can deny its possibility and it should be kept in mind by epidemiologists.

THE TREATMENT OF EMPYEMA

F. J. Savage, M. D., Capt., M. C., U. S. A.
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During the Fall, Winter and Spring of 1917 and 1918, empyema of the pleural cavity appeared in such virulent form and in such quantities, as to make the treatment of it a burning question in many cantonments. The importance of the question was recognized by the Surgeon General, and led to the appointment of empyema boards in the Spring of 1918.

The order issued at Camp Custer detailed one surgeon, one medical man, and one laboratory man, to report to the chief of the surgical service as a full time consulting board. They were to direct the study of empyema, pneumonia, and all acute infections of the respiratory tract in all their phases, including etiology, pathology, symptoms, diagnosis and treatment; and to report thereon every two weeks.

It was the writer's privilege to be intimately connected with the empyema situation at Custer for a period of four months, and on the formation of the board to be it's surgical representative. In addition to their other duties, the board was given control of three pneumonia wards. This represented approximately 150 pneumonia and empyema cases.

At the outset it should be kept in mind that 90% of our fatal cases and 80% of the total cases were streptococcic. A large percentage gave a history of a bronchitis lasting from 4 to 5 days up to 6 and 8 weeks. Bronchopneumonia and measles were the two chief antecedent diseases.

A condition was designated as empyema which showed an acute non-tuberculous collection of exudate in the pleural cavity.

The physical finding of greatest value was absent tactile fremitus. This was always confirmed by the needle. The X-ray was used as a routine procedure, and in a considerable percentage of cases was of value.

The one great and burning question was—shall these cases be operated early when the fluid is thin and watery; or shall they be treated by aspiration, or by some other palliative method, until the pus becomes thick and creamy?

When the writer first reported at the Base Hospital at Camp Custer, in the winter of 1918, every man who had a streptococcic fluid in his chest was promptly subjected to a rib resection. The shock of the operation itself was slight as compared to that produced when the inrushing air displaced the heart and collapsed the lung on the operated side. The mortality was 30% . One of the nurses remarked that Sherman may have been right but that he had never seen ward 14.

At a later period a series of cases were treated by aspiration, valve drain, canula drainage, and catheter drainage, in the effort to avoid the unfortunate results of early resection, namely, heart displacement, (with it's accompanying drag on the great vessels) and collapse of the lung. Sixteen cases were resected when the pus was creamy and but one died. The surgical service began to think they had solved the problem. It developed, however, that during this period, fifteen cases were treated by aspiration only, with ten deaths—mortality 66⅔%. The total mortality in this same period was about 55%. In other words, in exactly the same types of cases, which formerly gave a 30% mortality with prompt rib resection, the total mortality of all cases were nearly doubled: but the deaths were recorded by the medical and not the surgical service.

These figures refute the statements of the empyema commission from Camp Lee; published in the journal of the A. M. A. of Aug. 10. Their statement is as follows: "The evacuation of the pleural exudate by operation early in the disease involves greater risks without compensating benefits, than the removal by aspiration. Much of the relief offered by operation, without its attendant dangers, can be afforded by aspiration, repeated according to indications. The condition of the patient at this time calls for medical rather than surgical treatment."

If a patient can be tided over the early stages by aspiration, the operative statistics will be far better than if every case is resected early, but the total number of deaths will be greater. One is not dealing with the ordinary type of empyema as found in civil life. One is dealing with a fulminating toxaemia with large quantities of fluid rapidly formed. One of our cases had 6,000 c.c. withdrawn by aspiration in 7 days—nearly one quart per day.

The statement was recently made at a clinical lecture at Bellevue Hospital that two schools had developed in the matter of handling empyema cases. One advocated early operation, and the other, aspiration early, and resection later.

In the opinion of the writer a compromise position is the procedure of choice. The Brewer tube, connected with a negative pressure system, and used early in the disease, gives good drainage and at the same time prevents extreme collapse of the lung and displacement of the heart. This method was used at Custer in some 10 cases up to May 25. Up to that time the results were satisfactory. The tube is inserted in the axilla, between the ribs, under local anaesthesia. There is practically no shock or pain. Resection is done at a later period, but in the meantime, enough pleural adhesions are formed to prevent extreme collapse of the lung, and the mediastinum is sufficiently anchored by adhesions to prevent any marked heart displacement.

When the pus is not localized, resection of 4 cm of the eighth rib, beginning at the angle and extending outward, seems to be the most satisfactory site of operation. This permits of the use of the Carrell-Dakin method of treatment and gives dependent drainage during convalescence.

The value of the Carrell-Dakin method of treatment has been fully demonstrated. The practice at Custer was to introduce 4 tubes while the patient was still on the table. As a rule the first flushing was done on the table. The occasional case with a bronchial fistula may not permit of the use of this method. Once a day the cavity is completely emptied and flushed until the solution comes away almost clear. After this the customary two hour treatment is used.

Recent work seems to show that the chlorine content of Dakin's solution in an empyema cavity diminishes so rapidly, that if the weight of a chest full of fluid is unpleasant, good results may be obtained by leaving it in the chest 15 to 20 minutes only, and not replacing it until the two hour period is up.

Recent figures from the War Demonstration Hospital, in connection with the Rockefeller Institute, show that 50% of their empyema cases have been discharged to duty within three months.

Before the Carrell-Dakin method was systematically used at Custer, it was a common experience to find a small, non-expansile lung, with a large pus-discharging cavity, two months and more after operation. After this method was instituted, the improvement in the ward was striking. The odor of pus almost completely disappeared, the wounds began to take on a healthy appearance, and the general condition of the patients markedly improved.

In the first series of cases, thirteen out of sixteen showed negative bacterial counts in from four to ten days.

With a negative bacterial count, but with the patient continuing to show septic symptoms, one should look for a pocket of pus not communicating with the main cavity, or for some additional pneumonic involvement, or for a distant pus focus. Given a case with a negative bacterial count, a normal morning temperature with a pulse of 90, but with an afternoon temperature and pulse of 100, one would expect to find a walled off pleural or interlobar pocket of pus. For example, if the original empyema had shown a general right sided involvement and the clinical picture

after three or four weeks was as above described, one would expect to find an apical pocket, showing a fluid level on X-ray examination as high as the second or third rib, or a pocket lying between the pericardium on the inner side and a compressed lung on the outer side. In the latter case, the needle inserted just below and to the inner side of the right nipple would show pus.

Localized pockets are opened as may be indicated in each individual case.

The earlier an empyema cavity is rendered sterile, the less fibrous tissue there will be to keep the lung contracted, the earlier the opening may be closed surgically or allowed to granulate in, and the quicker the lung will re-expand. Last, but not least, there will be less probability of pocket formation.

THE TECHNIQUE OF RADIUM APPLICATION

By D. T. Quigley, M. D., F. A. C. S.
Omaha, Neb.

Correct technique in the use of radium tubes is just as important to the user of radium as correct technique in the use of the scalpel is important to the surgeon. While the action of radium rays per se is not poisonous to the tissues, still the dangers of radium in the hands of the unskilled can only be compared to the dangers of the knife in the hands of the unskilled surgeon. Both the clumsy use of the knife and the clumsy use of the radium tube may break into blood vessels and cause death from hemorrhage; both may break into hollow organs, as the bladder, or rectum, causing irreparable damage; both may injure permanently, if unskillfully used, vital organs as eyes, vocal cords, middle ear structures, etc. It will be seen that the successful radium operator must, like the surgeon, have a very keen appreciation of the anatomy and the histology of the different organs of the body, and in addition to this he must have a very complete knowledge of the physiology of the different parts and organs. On the anatomy and the physiology depends the reaction to radium rays and on this, plus pathology, and an exact knowledge of the chemistry and physics of the potent element he is using, the radium operator bases his treatment.

Training in surgery and knowledge of anatomy and pathology are so necessary to the successful use of radium that I believe the use of radium should be kept strictly in the hands of surgeons. That he be a surgeon is most important, but he must also understand something of eye, ear, nose, and throat work, as he will be called to treat the larynx, the middle ear, the eye, the antrum and other locations where special knowledge and skill are necessary. The radium operator must also have a knowledge of the skin and venereal specialty that he may make correct diagnosis of the many skin cases submitted to him and that he be not led astray by the protean manifestations of syphilis. As a Roentgenologist he must be able to read and interpret plates. As an internist he must be able to separate the local from the general in disease, must correctly interpret blood findings, painful conditions, tell an enlarged spleen from a tumor, estimate a patient's vital powers, detect mailingering, etc. As a bacteriologist he must understand the normal and abnormal micro-organisms that may inhabit the cavities and the surfaces where he places his tubes, for instance, the mouth, the rectum, the vagina, the ear, the skin, etc. The particular germs in the particular localities have an effect in influencing the reaction and tolerance, and consequently modifying the physiology and pathology and resistance in each case. As a pediatrist the radium operator must understand the difference between the anatomy, physiology, pathology and resistance of the baby and the adult. As a gynecologist he must have an educated hand to intelligently explore the female pelvis and an educated eye to recognize pathology through the speculum. He must be able to correctly place his tubes in the genital tract and know how large a dose a given case will stand without danger to surrounding organs. The objection will be raised that such a paragon of efficiency does not exist in medicine. Perhaps not, but the skilled surgeon comes nearer to it than any other medical man. Murphy said, "A good surgeon must first be a good physician." In this case I would say, "A good surgeon who is first a good physician may become a good radium operator."

The most important thing in radium technique is the amount used and the percentage of purity. The specimen should be 60 to 90 per cent pure and an amount of at least 50 m. g. radium element should be used. Next in importance is the screening used and time applied and the distance the radium is placed from the diseased area. In the techinque of radium there are two general methods of use. The divided dose method in which relatively small doses of the rays are used over long periods of time, the object being to destroy the disease without producing a burn. The second method is called the "massive dose" method in which the effort is made to kill the disease at once, with a large dose of rays, disregarding the burns altogether.

The burns from radium are benign. They never result in cancer and unless some irritant is present to keep the sore open they always heal in a reasonable period of time. This being the case there seems to be no reason for dragging a treatment over months or years and taking the chance of the cells developing an immunity to the rays or a stimulation of the growth resulting from small dosage. The author has always followed the "massive dose" method, disregarding burns in every case except where hollow organs, or blood vessels, or special sense organs, might be broken into. The surgeon does not hesitate to cut deep and wide because of fear that the wound will not heal. The radium operation should not hesitate to use a dose sufficient to destroy the disease he seeks to conquer.

In considering dosage we may take the skin as the standard and as skin differs in thickness, nerve supply, etc., the average skin of the chest or abdomen may be designated. If then, we consider the burn we get from the application of 100 m. g. radium for 10 hours encased in 1 m. g. silver 1 m. g. rubber and 1 m. g. of gauze, each tube so encased and each tube containing 25 m. g., 60 per cent pure radium salt, this will represent the maximum dose such a surface would stand without destroying the skin through its entire thickness, and which would heal in a reasonable time, and not leave adherent scars. Taking this as a standard and arbitrarily calling it 100 units we may compare the different parts of the anatomy usually exposed to radium rays as follows:

Skin of face, 75 units.
Skin of scalp, 125 units.
Skin of groin, 65 units.
Skin over buttocks, 125 units.
Skin over fascia lata, 125 units.
Skin over ear, 60 units.
Skin over eyelids, 50 units.
Edge of eyelids, 80 units.
Eyeball, 80 units.
Mucous membrane of lips and cheeks, 50 units.
Mucous membrance of tongue, 70 units.
Mucous membrane of rectum, 20 units.
Mucous membrane of urethra, 10 units.
Mucous membrane of larynx, 70 units.
Mucous membrane of bladder, 25 units.
Wall of uterus, 300 units.
Buried in tissues; bone, 300 units; muscle, 200 units.

It will be seen that I consider the eye nearly as resistant to radium as the skin, and the uterus the most highly resistant of any organ.

Embedded in tissue the reaction is not so severe as on the surface. The reason for this is probably because in a case where the radium is buried the surroundings are practically aseptic while on a surface or hollow organ there are more or less micro-organisms to attack the tissues.

In passing to pathology we find carcinoma the most resistant tumor we have to deal with. A 50 m. g. tube will kill carcinoma cells for a distance of 4 cm., if left sufficiently long. Larger quantities will not do much if any better as regards distance, but will accomplish the same result in a shorter time. Sarcoma is probably twice as radio-sensitive as carcinoma, the lymphosarcoma being extremely radio-sensitive. Fibroma and myoma are perhaps the most radio-sensitive, a tumor the size of an eight months pregnancy disappearing in four months time after 40 hours of treatment with 75 m. g. of radium. Pedunculated fibroids respond as well as others if cross-fire is used. Angioma responds to treatment very readily but in children the tumor is much more radio-sensitive than in the adult.

On the same basis of computation as we used in comparing histological differences, we may adopt 100 units as the dose for a skin carcinoma extending as deep as the deepest layers of the

skin of a size that could be just covered by the tubes in question.

Proceeding then to other pathological conditions we make comparisons as follows:

Carcinoma of skin $\frac{1}{4}$ inch deep, 100 units.
Sarcoma (round cell), 50 units.
Angioma (adult), 50 units.
Angioma (child), 25 units.
Fibroma and myoma, 10 units.
T. B. (lupus), 40 units.
Melanoma, 100 units.
Lymphosarcoma, 30 units.

These comparisons are made on the basis of the tissue being the same thickness and are not taken as practical examples but solely for the purpose of illustrating the difference of radio-sensitiveness in different pathological tissues. For instance, a given dose of radium rays will destroy fibroid tissue ten times as far as it will destroy carcinoma, while angioma, sarcoma, and T. B. lesions are approximately twice as radio-sensitive as carcinoma. Melanoma is about the same as carcinoma and this is not to be wondered at for the modern trend of opinion is that these tumors are carcinoma. In practical work heavy screening should be avoided as much as possible except to protect normal tissues, as beta rays are probably very important to secure the best results. Accurate approximation is another very important feature. I have seen a couple of radium tubes stuck carelessly into the vagina for cancer of the uterus without any regard to the accurate approximation of the diseased area with the tubes. Such methods can only bring bad results. The tube in these cases must be placed clear to the fundus and the whole uterus rayed. 5 m. g. to 75 m. g. covered with $\frac{1}{2}$ m. m. silver and 1 m. m. hard rubber and used for 70 to 80 hours in a week or ten days' period, will give the best results in these cases. In these cases the cervix should be cross-fired by tubes placed horizontally against the cervix at the same time that the tube is inside the cervix.

In dealing with radium the fact should be always borne in mind that light decreases as the square of the distance. For instance, a tube 1 m. m. from a diseased spot will give a certain dose. Place the tube 10 m. m. from the surface and give it the same time and you will not get one-tenth the dose, but one one-hundreth the dose given in the first instance. In other words to get the same dose at 10 m. m. distance the time would have to be 100 times longer than at 1 m. m. distance.

A good deal of misunderstanding and confusion in the matter of radium technique has arisen because of comparing radium with the X-ray. It is well that the student of radium understand that these two agents are different, physically and in physiological action. It would be just as logical to compare arsenic with cane sugar because they are both white, as to compare X-ray with radium, because they both light up the fluoroscope.

A volume would be necessary to properly discuss radium technique. In the hands of one who understands the element and the pathology it is an agent capable of great good. In the hands of one who neither understands the radium nor the pathology the results may be not only negative but harmful.

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EDITORIAL

VOCATIONAL REHABILITATION OF SOLDIERS

In a recent address before the Hennepin County Medical Society, Mr. H. W. Jones, District Vocational Officer of the Federal Board for Vocational Education, pointed out some very interesting facts concerning the vocational rehabilitation of soldiers. These are of such timely importance that they should be given emphasis.

It was not long after the beginning of the great war in Europe that, owing to the new methods of warfare adopted by the Germans —the use of gas and other devices—it was found that the French and English were losing so many men both by death and by wounds, steps had to be taken to rebuild the disabled men for service in civil life, thus releasing others to take their place at the front.

The problem is a serious one, but it has been well met by France and England as well as in the British colonies, especially Canada. Upon entering the war the same problem confronted us and we have been fortunate by profiting by the experience of other nations, especially by our next neighbor, Canada.

The passing of the Smith-Sears Act by Congress in June, 1918, placed in the hands of the Federal Board for Vocational Education the task of the vocational rehabilitation of our disabled men to refit them for the tasks of life where they could be taught to become self-supporting with their disability, to an equal, if not to a greater extent, than before they were injured.

The War Risk Insurance which every soldier and sailor was expected to take upon his enlistment covering his total disability, was payable to his family in case of his death, or to him direct if he were entirely unable to care for himself. The possession of War Risk Insurance policies entitles every man automatically at the time of his discharge from the hospital, if suffering from an injury exceeding 10%, to compensation equal to his base pay, whatever that might be. To this is added by the Federal Board for Vocational Education an amount sufficient to bring it up to $65. To this the man is entitled during his training for a new profession or occupation.

Each man makes application for compensation from the Bureau of War Risk Insurance at the same time filling out blanks applying for such training as in the judgment of the Board is best fitted for each man's individual case. What the man did before going into the service, what he would like to be trained to do, together with the suggestions of the Board's trained Adviser, govern to a considerable extent the man's placement in suitable training. No stone is left unturned in discovering what is the best thing to be done for each man regardless as to what it may cost.

After the program of the man has been mapped out by the staff of the local Board; the matter is put up to what is known as the Case Board, consisting of District Vocational Officer, Medical Officer, an Employer and Employe called in from outside, the Employer looking at the program from the standpoint of the man who is to give employment, and the Employe through the eyes of the man himself. When thus approved, each case is sent to the office in Washington, which wires back approving course, and the man is placed in training.

There are no special schools established for this training, already existing institutions being found in abundance for nearly every trade or vocation. In exceptional cases, it may be necessary to arrange with some line of industry where the man may be placed as an apprentice.

It is the work of the Board to keep in touch with the man's progress during this training. If he is not making good, compensation is stopped and the man is obliged to go it alone. Otherwise the Board finds a position for the man at the completion of his course when qualified, and even after placement keeps in touch with him to see that he is making good and that the employer is doing the square thing by him. It will thus be seen that the man is placed in a position to be self-supporting, and a full fledged independent American citizen, much better than the old pension system, is the result. No man need now be found on the corners of the streets selling lead pencils because of being disabled through the war.

THE VOLUNTEER MEDICAL SERVICE CORPS

Early in February each physician in the United States exclusive of those who served in the Medical Corps of the Army for the past two years and members of the Volunteer Medical Service Corps, received a communication from the Council of National Defense, requesting that he fill out and return promptly to the Washington office an accompanying questionnaire, so that there may be on file in Washington complete individual information covering the members of the profession. Simultaneously with the distribution of these questionnaires, state and county representatives of the Volunteer Medical Service Corps were instructed to urge all doctors in their communities to comply promptly with the request of the Council to fill out and forward promptly to Washington the blanks sent them; and to advise those who by any chance failed to receive blanks, to communicate with the Council of National Defense at once in order that application blanks might be furnished them.

The Volunteer Medical Service Corps was organized early in 1918 to serve the Government during the emergency of war. As this emergency has ceased to exist, active membership in the Corps is no longer solicited. However, the survey initiated by this organization last year has proved of such value as a source of information concerning the individual members of the medical profession that the Surgeons General of the Army, Navy and Public Health Service have requested the Council of National Defense to complete it so as to include every doctor in the country, in order that a permanent record of the profession may at all times be available for reference in future emergencies. Upon their completion, the records will be transferred to the Surgeon General's Library where they will be kept up-to-date by a force assigned for the purpose, and be accessible to all Government bureaus.

Every physician is requested to co-operate with the Council of National Defense in making this record complete, by returning at once the questionnaire received or by writing to the Medical Section of the Council of National Defense, Washington, D. C., and requesting that a blank be sent him if through an oversight he did not receive one.

MINNEAPOLIS CLINIC WEEK

The Clinic week held in Minneapolis last year from April 8th to 12th was such a decided success and so many inquiries have been received from out of town physicians regarding further Clinics that the Executive Committee have decided to make it an annual event.

The Clinic will be held from May 5th to May 9th, inclusive, and many new features will be added.

A more detailed announcement will be made in the next issue of *Minnesota Medicine*.

Physicians Licensed to Practice in Minnesota

January 22, 1919

BY EXAMINATION

Bentley, Norman Phillip....Syracuse U., 1909
Bjorgo, Carl Walter.....Rush, 1918
Hanson, Harlow James.....U. of Ill., 1919
King, William Robert.....Harvard, 1917
Waldie, George McL.....Tufts, 1911

BY RECIPROCITY

Dummer, William Martin. Northwestern, 1918
Hook, John Stuyvesant..Western Pa. U., 1904
Lemon, Willis Storrs.....Toronto U., 1905

OBITUARY

DR. ELIJAH S. KELLEY

Dr. Elijah S. Kelley, a resident of Minneapolis, for 52 years, died on February 8th, at the age of 72.years. Dr. Kelley was born in Canada on June 24th, 1846, coming to Minneapolis when about 21 years of age. He was health commissioner of Minneapolis from 1891 to 1895.

DR. C. M. OBERG

Dr. C. M. Oberg, Minneapolis, died on January 30th of pneumonia after an illness of about ten days. Dr. Oberg was a graduate of the University of Minnesota, class of 1910. He is survived by his widow, two daughters, his parents, and six brothers. The funeral took place on February 2d, with burial at Lakewood cemetery.

DR. J. M. O. TUFTY

Dr. J. M. O. Tufty for the last thirty years a prominent physician of Duluth, died suddenly of heart failure on February 4th. Dr. Tufty was born in Norway, April 27, 1857, and was educated at the University of Christiana, coming to Duluth in 1886 and following his profession up to the time of his death. He is survived by his widow and daughter and two sons.

DR. S. O. FRANCIS

Dr. S. O. Francis, of White Bear, Minn., died January 30, after an illness of several years. Dr. Francis was born on February 7, 1860, in Dudley, Ill. He was a graduate of Asbury University, Greencastle, Ind. He later moved to St. Paul, where he first practiced medicine, moving to White Bear in the summer of 1887. During the succeeding years, nearly thirty-two in all, he was closely identified with the interests of White Bear village and the surrounding territory. His funeral was held on Sunday afternoon, February 2d, with interment at the Episcopal cemetery.

OF GENERAL INTEREST

Dr. Bernard Bohling has returned from France and has resumed his practice in Sandstone, Minn.

Dr. J. M. Hall, Minneapolis, who has been stationed at Camp Greenleaf, Ga., has returned to his home.

Dr. K. C. Wold, recently returned from a six months Army service and expects to resume his practice in St. Paul.

Dr. J. H. Cosgrove has been mustered out of the medical reserve corps and has resumed his practice at Duluth, Minn.

Dr. W. W. Drought, Fergus Falls, has gone to New York, where he will spend some time doing research and post-graduate work.

Dr. Ida M. Alexander has returned to her home in Sauk Center after having spent a year in the service of the Red Cross in France.

Dr. F. C. Wheat of Minneapolis has taken over the practice of Dr. C. M. Storch at Anoka, Minn. Dr. Storch has returned to Minneapolis.

Dr. Rachel E. Moulton, Minneapolis, has gone to New York where she expects to spend several weeks doing research work in medicine and surgery.

Dr. J. Gendron who has been a captain in the medical division of the U. S. Army, has returned home and has resumed his practice in Grand Rapids, Minn.

Captain O. I. Sohlberg, St. Paul, was recently given a citation to General Headquarters for service with the Eighteenth Division to which he has been transferred.

Dr. E. E. Webber, Chisholm, Minn., was recently appointed chief surgeon of the Duluth, Mesaba and Northern Railroad, succeeding Dr. W. H. Magie of Duluth.

Dr. A. C. Strachauer, Minneapolis, has been appointed acting chief of the Department of Surgery, University of Minnesota Medical School, until January, 1920.

Dr. H. J. Hanson, Hutchinson, recently returned from Chicago, has moved to New London, Minn., where he has become associated with Dr. M. O. Oppegaard.

Dr. M. C. Piper, Sanborn, has received an honorable discharge from the army and is spending a few weeks in Chicago before returning home to resume his practice.

Dr. W. L. Palmer, Albert, Lea, Minn., has been honorably discharged from the army, and is now in Chicago where he will take a short course of study before returning to resume his practice.

Dr. Wayne W. Bissell and Dr. Walter M. Boothby, who have been serving with the U. S. Medical Corps and who have spent several months in active service in France, have returned to Rochester.

Dr. Asa W. Daniels, pioneer physician of Minnesota, having practiced in the city of St. Peter for over fifty years, recently celebrated his ninetieth birthday at Pomona, California, where he has made his home for the last few years.

Dr. M. S. Bringman of Boston, Mass., has taken over the practice of Dr. J. T. Schlesselman of Good Thunder, Minn. Dr. Schlesselman, it is announced, will devote his practice to the eye, ear, nose and throat, and will locate at Mankato, Minn.

Dr. A. H. Schwartz, Duluth, who has been discharged from the service at Camp Greenleaf, is recovering in a hospital at Los Angeles, from illness developed while in the army. As soon as his condition permits he will return to Duluth and resume his practice.

Dr. C. C. Burlingame formerly on the staff of the Fergus Falls State Hospital was recently appointed director general of the medical and surgical department of the Red Cross in France. Dr. Burlingame went to France early in the war and has received a decoration for bravery from the French Government.

Dr. Robinson Bosworth, Advisory Executive Secretary of the State Advisory Commission, has been honorably discharged from the U. S. Military Service and has returned to Minnesota to assume his previous duties. During his absence, Dr. Bosworth was stationed at U. S. Army Hospital No. 21, Denver, Colo., which institution is given over to the care and treatment of tuberculous soldiers.

It is amusing to learn that the procuring of medical freedom and equal recognition for all schools of medicine is the ultimate purpose of the Minnesota Anti-Vivisection League, which held its first semi-monthly meeting at 917 Marquette Street, Minneapolis, recently. The immediate work to be undertaken by the league, Dr. H. A. Zettel, St. Paul, the president, said, is raising the membership from seventy-five now enrolled to 10,000 and to oppose through organized effort, vivisection, compulsory vaccination and inoculation and all forms of cruelty toward man and beast.

The annual session of the Southern Minnesota Medical Association was held in Mankato on January 20th and 21st. The program was opened with a toast to the medical men in the war by Dr. Harry J. O'Brien of St. Paul. Dr. W. J. Mayo of Rochester described some of the old hospitals of London; Dr. M. S. Henderson of Rochester, the president, gave his annual address and Mr. George W. Peterson of St. Paul spoke on "Legal Aspects of Medicine and Surgery." On the evening of January 21st, Dr. G. F. Merritt and Dr. J. H. James of Mankato were the guests of honor at a banquet held at the Elk's Club.

A medical department, under the direction of the Board of Foreign Missions, to guard the health efficiency of its missionary workers, has been established by the Methodist Episcopal Church in connection with its missionary centenary to raise $120,000,000—$85,000,000 for the Church North and $35,000,000 for the Church South—for general world upbuilding and extension of its missionary work at home and abroad. Dr. J. G. Vaughan, M. D., formerly of Nanchang, China, is executive secretary of the new department with temporary offices at the headquarters of the Missionary Centenary, 111 Fifth Avenue, New York. Dr. Vaughan was graduated from the Northwestern Medical School, Chicago, in 1907 and for six years was a medical missionary in China. On his return to this country in 1916, he became connected with the office of the chief surgeon of the Chicago, Rock Island & Pacific Railroad in Chicago. He left that position to organize the new medical department of the Methodist Foreign Missionary Board. Missionaries on the field and on furlough will have the benefit of counsel from the new department, while all candidates will undergo their medical examinations from the physicians in charge. To provide for the best service in this respect, suitable offices and equipment will be obtained with a sufficient staff of trained workers to

meet the increasing demands arising from the enlarging force which the Centenary program will require in the field. The Church invests from $20,000 to $50,000 in each missionary for life work and it will be one of the duties of the medical department to see that each person accepted is a "good risk." Supervision of the health of the workers in the field will gradually be taken over by the new department.

Lieut. Paul J. Preston, formerly associated with Dr. R. E. Farr of Minneapolis, has been with the British Expeditionary Forces for the last fifteen months and was recommended for the British Military Cross after the battle of September 27th-October 1st. Out of twenty-two officers who went into this battle, only four—the Commanding Officer, the Adjutants and Dr. Preston—came out of it. In a recent letter to Dr. Farr, Dr. Preston writes as follows:

"You will no doubt be surprised to hear of my being decorated with the Military Cross (British.) I was recommended for it after our battle of September 27 to October 1st, during which time we went through "Hell" and back again. There were only four company officers, the C. O., Adjutants, and myself, came out of it, out of twenty-two officers, so you can see what our casualties were, saying nothing of the N. C. O.'s and men we lost. During those three days I put through between four and five hundred wounded at my dressing station, of course not all of them being from my battalion.

"I am very pleased on receiving the honor as it is a very pretty medal and a nice memento of the war. The reason for the delay in being notified of having received it was because it had to go through all the American channels as well as the British."

Hospitals are to be built in the five republics of South America, which, by interdenominational agreement, have been placed under its supervision, by the Methodist Episcopal church as a part of its Missionary Centenary program the purpose of which is to raise $120,000,000 (in connection with the southern branch of the denomination) for world upbuilding and the extension of missionary work. There is at present not one hospital in the entire South American continent under the direction of any American Mission Board. There is one union dispensary in Rio de Janeiro — that is all. The Methodist Foreign Mission Board has engaged Miss Charlotte A. Aikens, editor of the Trained Nurse and Hospital Review, (New York) to tour Argentina, Uruguay, Chile, Bolivia and Peru to study the needs of the field and the conditions which prevail there. After her report has been received the number and location of hospitals and health stations to be built in the five republics as part of the centenary program will be announced. Miss Aikens, after a postgraduate course in nursing at Polyclinic Hospital, New York, was in succession, superintendent of the Sibley (Methodist Episcopal) Hospital in Washington, D. C., of the Iowa Methodist Hospital in Des Moines, and of the Columbia Hospital in Pittsburgh. She is known as a writer of text books on hospitals and nurses' training. She has been given a leave of absence by the Trained Nurse and Hospital Review to make the South American trip for the Methodist Missionary Centenary.

Duluth pharmacists and physicians will oppose the bill introduced in the State Legislature by Guy E. Dilley, St. Paul representative, which prohibits the sale or manufacture of any drug, liniment, extract or condiments which contain more than five per cent alcohol; forbids the use of anti-toxin, vaccine, serum or tuberculin for use of man or beast that have after-effects. A meeting will be held in the near future to send delegates to St. Paul to oppose the bill.

The bill also provides that all packages containing drugs or medicine shall bear a copy of the prescription of ingredients in plain English and that any package or bottle containing alcohol, morphine, heroin, cocaine or derivatives shall be marked in bold letters "Dangerous."

Druggists point out that alcohol must be used for tinctures and as a solvent for the majority of drugs which are not soluble in water, but in alcohol or ether alone. Ether, they say, could be used, but it would be more dangerous than alcohol.

"Adoption of such a law would practically put every drug store in the state out of business," E. H. Whittaker of the Orpheum pharmacy stated. "Few drugs can be sold which can be dissolved in five per cent alcohol. Use of alcohol is absolutely necessary. The government has listed all medicines containing alcohol which may be used as a beverage and are handling the situation with a strong hand."

"Putting the ban on toxins which have after effects would prohibit the tuberculin test in cattle," Dr. C. A. Newton, city veterinarian said recently. "The bill is one of the foolish pieces of legislation that has come to my attention."

That the word "Dangerous" upon all medicines containing the drugs enumerated in the bill is folly is the contention of the druggists. Many medicines do not contain enough of the drugs to make them dangerous and such labeling would unnecessarily frighten the users.

NEW AND NON-OFFICIAL REMEDIES

During January the following articles were accepted by the Council on Pharmacy and Chemistry for inclusion with New and Non-official Remedies:

Dermatological Research Laboratories:
Neoarsenobenzol
Guiseppe W. Guidi:
Litiolo
Merck and Co.:
Digitan
Digitan Tablets, 1½ Grains
Quinine Ethyl Carbonate-Merck
Monsanto Chemical Works:
Chloramine-T, Monsanto

NEW AND NON OFFICIAL REMEDIES

Chloramine-T Monsanto. — A brand of chloramine-T which complies with the New and Non-official Remedies standards. The properties, actions, uses and dosage are described in New and Non-official Remedies, 1918, p. 156. Monsanto Chemical Works, St. Louis, Mo.

Chlorinated Eucalyptol, Squibb. — Eucalyptol chlorinated at room temperature. It is used as a solvent for dichloramine-T in the treatment of infected wounds, etc. The solution should preferably be made as required. E. R. Squibb and Sons, New York.

Arsaminol.—A brand of arsphenamine which complies with the New and Non-official Remedies standards. Arsaminol is supplied in sealed tubes containing, respectively, 0.1 Gm., 0.2 Gm., 0.3 Gm., 0.4 Gm., 0.5 Gm., and 0.6 Gm. Takamine Laboratory, Inc., New York (Jour. A. M. A., Jan. 18, 1919, p. 193).

Digitan.—A digitalis preparation said to contain digitoxin and digitalin in the form of tannates. It is standardized biologically. Digitan was first introduced as digipuratum and is made under the digipuratum patent by license of the U. S. Federal Trade Commission. The actions, uses and dosage of digitan is the same as those of digitalis. It is sold in the form of a powder and as digitan tablets 1½ grains. Merck and Co., New York.

Neoarsenobenzol (Dermatological Research Laboratories).—A brand of neoarsphenamine complying with the New and Non-official Remedies standards. It is marketed in tubes containing, respectively, 0.1 Gm., 0.3 Gm., 0.45 Gm., 0.6 Gm., 0.75 Gm., and 0.9 Gm. Dermatological Research Laboratories, Philadelphia Polyclinic, Philadelphia (Jour. A. M. A., Jan. 25, 1919, p. 275).

PROPAGANDA FOR REFORM

Misbranded Nostrums. — The following "patent medicines" have been the subject of prosecution under the Federal Food and Drugs Act: Paine's Celery Compound; Botanic Blood Balm; Owens' Wonderful Sore Wash; Lafayette Cough Syrup; Gilbert's Gravel Root Compound; Strange's Rheumatic Remedy; Baur's Diamond Brand Bromides; S. B. Cough and Consumption Remedy; Gowan's Preparation; Urol; Boxenbaum Discovery; Tablets Creavita; Old Lady Fulten's Comforting Pills; C. C. C. (Crownall Elastic Capsules); Victor Injection; No. 19 Compound and No. 6 Compound; Hemogenas Pills; Restorative Tablets—Fountain of Health; Denn's Strong, Sure, Safe and Speedy Stomach, Liver, Kidney and Rheumatism Remedy; Dr. Navaun's Mexican Lung Balm; Dr. Navaun's Kidney Tablets; Dr. Chas. DeGrath's Electric Oil; Bovinine; Fritch's Vegetable Liniment; Perkin's National Herbs Blood Purifier, Kidney and Liver Regulator; Dr. Lemke's Golden Electric Liniment; Dr. Lemke's St. Johannis Drops; Mentholatum; Enteronol; Dr. Harter's Lung Balm; Dr. P. Phelps Brown's Herbal Ointment; Taylor's Horehound Balsam; Breeden's Rheumatic Cure; Sulphur Bitters; Dr. DeWitt's Eclectic Cure; Dr. DeWitt's Liver, Blood and Kidney Remedy; Payne's Sylas; Dr. Bell's Pine Tar Honey, and Lung Germine (Jour. A. M. A., Jan. 4, 1919, p. 59).

"Aspirin" a Common Name. — The claim of the Bayer Company to the exclusive right of applying the name "aspirin" to acetylsalicylic acid will be definitely set aside if the recommendation of the examiner of interferences of the United States patent office is upheld. The stand taken by the patent office is in line with the established principle that no one can have a monopoly in the name of anything. Since "aspirin" has become the common name for acetylsalicylic acid, no one firm can have an exclusive right to it (Jour. A. M. A., Jan. 11, 1919, p. 119).

The Quality of the Market Supply of Procaine. —The local anesthetic procaine (first introduced as novocaine by the Farbwerke vorm. Meister, Lucius and Bruening, Hoechst A. M. Germany)—is now man-

ufaetured by the Abbott Laboratories, the H. A. Metz Laboratories and the Reetor Chemical Company. The products of these three firms were accepted for New and Non-official Remedies after the A. M. A. Chemical Laboratory had reported speeimens chemieally satisfactory and the Cornell Pharmacologie Laboratory had determined that they were not unduly toxic. In aecordanee with its announeement to report from time to time on the quality of Ameriean made synthetics, the Counеil on Pharmaey and Chemistry now publishes a report on the quality of the procaine now supplied to physieians. The examination demonstrates that the three brands were of a satisfactory quality. Some of the specimens of procaine-Abbott and procaine-Rector had a yellow or light brown tinge (a speeimen of procaine-Metz "novocaine" recently sent the Council also had a slight yellow tinge), but so far as the evidenee goes there is nothing to indicate that the discolored specimens are seriously impure. The Council eonsiders the use of the discolored product justified in the present emergency, but urges that for the future a colorless preparation be supplied (Jour. A. M. A., Jan. 11, 1919, p. 136).

Pluriglandular Mixtures.— The Council on Pharmaey and Chemistry reports that the following preparations put out by Henry R. Harrower have been found ineligible for New and Non-official Remedies: Caps. Adreno-Spermin Comp.; Caps. Antero-Pituitary Comp.; Caps. Plecerto-Mammary Comp.; Caps. Thyro-Ovarian Comp.; Caps. Hepato-Splenic Comp.; Caps. Pancreas Comp., and Caps. Thyroid Comp. Each of the mixtures contained one ingredient or more which is neither recognized in the U. S. Pharmacopoeia nor admitted to New and Non-official Remedies. For obvious reasons the Council does not accept a mixture eontaining an indefinite ingredient; hence, it would be necessary as a preliminary for the eonsideration of any one of the mixtures that their unoffieial ingredients be made eligible for New and Non-offieial Remedies, by the submission of evidence that such ingredient is of uniform composition and that it is therapeutically valuable when given by mouth. The mixtures were also ineligible because in the light of our knowledge the administration of gland mixtures in the host of eonditions enumerated in the advertising eircular of Harrower is irrational and on a par with the use of shotgun mixtures once in vogue (Jour. A. M. A., Jan. 18, 1919, p. 213).

Unsuccessful Attempts to Transmit Influenza Experimentally.—Two extensive attempts have been made under the auspices of the U. S. Public Health serviee and the U. S. Navy to Transmit influenza experimentally. Inoeulations were made of pure eultures of the influenza baeillus, of secretions of the upper air passages in the early stages of influenza, and of blood from typical eases of influenza, and other methods of transmitting the disease were tried. In no ease was influenza developed (Jour. A. M. A., Jan. 25, 1919, p. 281).

Evidence.—The Cutter Laboratory advertises that a physician has used between 700 and 800 doses of its Mixed Vaccine-Respiratory Infections as a prophylaetie without a single failure to "protect" against the disease. The Cutter Laboratory thinks this is evidence which "is eonvineing enough to satisfy even the most eonservative." If a physieian were to report that 643 of his patients who had used salt instead of sugar in their eoffee had remained free from influenza, would this be evidence of the prophylactic value of sodium chlorid? The seienee of therapeuties is eomplex enough at its best; and with commercialism dominating the production of therapeutie agents, the likelihood of ever arriving at anything approximating a true scienee of therapeutics seems hopeless (Jour. A. M. A., Jan. 4, 1919, p. 45).

Coca-Cola.—Analyses made by Federal chemists showed it to contain from 0.92 to 1.30 grains of caffein to the fluidounce. It would seem that in the interest of the publie health the indiseriminate sale to ehildren and adults of an alkaloid like caffein in the enticing form of a "soft drink" is to be deprecated (Jour. A. M. A., Jan. 25, 1919, p. 299).

Some "Patent Medicines" Investigated by the Government.—The following are the names of proprietary medieines which have been the subjeet of prosecution under the Federal Food and Drugs Aet in the Government's attempt to protect the publie against fraudulent or misleadingly advertised products: Royal Baby's Safety; Simpson's Cerebro-Spinal Nerve Compound; Constitution Water; Tweed's Liniment; Pulmonol; Crown Skin Salve and Pile Cure; King of the World and Family Liniment; Ka-Ton-Ka; Greenhalgh Diphtheria Remedy; Mountain Rose Tonie Tablets and Herbaline; Parmint; Sulphurro; "Liveon, The Ninety-Day Consumption Cure;" "Liveon Lung Dises;" White Beaver's Cough Cream and Wonder Work; Watkins' Vegetable Anodyne Liniment, Female Remedy and Kidney Tablets; Nature's Creation Co.'s Discovery; Radium Healing Balm; Phuton Kidney Remedy; Palmer's Skin Whitener; Burnes Baby Relief; Sayman's Healing Salve; Sayman's Vegetable Wonder Soap; Humphreys' Pine Ointment; Witch Hazel Oil (Compound); Hill's Honey and Tar Compound; "La Franeo Combination Treatment" and "La Franeo Vitalizer No. 200" (Jour. A. M. A., Jan. 25, 1919, p. 297).

CORRESPONDENCE

New York, Jan. 20, 1919.

My Dear Doctor Richards:

You asked me to inform you what was being offered in the East in post-graduate work in Internal Medieine.

Harvard offers good work in X-ray diagnosis and special eourses in Diseases of the ehest and Diseases of the abdomen. Apparently they are not anxious for many matrieulants until a little later as everyone was over-worked during the period of the war.

John Hopkins will not offer any post-graduate work until June 1st.

Here at the New York Post-Graduate Medical Sehool work is apparently going on just as it was before the war. At present there are about 200 registered; about 75% are men in uniform who have recently been dis-

charged, and the majority of them are taking the Urological course.

I am taking the following courses here: General Medical Diagnosis, Pathology, and Clinical Microscopy and Chemistry. After a few months I am going to Harvard for special courses in Diseases of the abdomen, Diseases of the chest, and X-ray work.

Several friends have already written me regarding what was being offered in the East; you may refer anyone whom you wish to me for details, and I'll try to answer their questions. Very sincerely yours,

I. J. MURPHY, M. D.

Seattle, Wash., Jan. 29, 1919.

My Dear Mr. Editor:

Prior to this war various evolutionary forces, without intelligent aid or organized assistance on the part of the medical profession, gradually compelled and are still compelling the followers of medicine into:

1. Accepting the specialist.
2. Demanding hospital facilities.
3. Associating and segregating into more or less organized groups.
4. Establishing private clinics, as the Mayo Clinic and similar institutions.
5. Establishing, as just instituted by Columbia University of New York, a still more advanced form of scientific medical organization, a clinical laboratory.

The same evolutionary forces have caused the laity:

1. To form mutual benefit organizations for the sick.
2. To demand contract practice.
3. To form hospital associations.
4. To demand state aid.
5. To demand free clinics.

In every one of these vitally important politico-economic movements, and in view of the fact that millions of men will return after the war and demand for themselves and for their families the same scientific treatment they have experienced under military organization, medicine as a profession has failed to recognize the same exciting cause in each instance—an economic demand that the theoretical standard of efficiency "Medical Ethics" must be replaced by a more practical standard, "Ethical Economics." This standard demands the application of scientific methods through economic organization to every-day life, so that efficient medical and surgical treatment will come within the reach not of the few who can receive hospital treatment in standard institutions but of every human being.

Confronted by the above politico-economic facts, a very pertinent question presents itself to the medical profession at large: What is medical organization—medical education—doing to solve these problems, at a time when an imminent reconstruction period confronts every form of organized society including the profession of medicine?

Based on observation and experience of 20 years the writer claims that virtually nothing practical has been systematically undertaken.

Nowhere is there evidence that medical organization—medical education—has ever recognized three basic psychologic factors that govern all intelligent human acts:—

1. One hundred per cent of the representatives of medicine, physicians, are human beings, and the minds of the highest and lowest are compounded of the same elements, held subject to the same laws of action; and the knowledge that any one of them possesses comes—as it does to every other human being—through the ordinary channels of the senses.

2. In the search for knowledge in every branch of human society, including medicine, science has produced innumerable mechanical aids to increase the efficiency of the senses of man. Therefore, logically, all things being equal, the mind of man gathers knowledge in proportion (a) to the number of mechanical aids employed to increase the efficiency of the senses; (b) the accuracy with which these aids are employed.

3. As a rule normal human emotions govern every human being, including the physician. Therefore, if the recompense for labor does not enable the physician to carry overhead expenses; does not give him time and funds for improvement, study, travel and necessary recreation; does not produce profit that is protection for his family and for himself in sickness and old age; he can neither give efficient scientific service nor continue to progress. If adequately recompensed he can give scientific service far more readily and is more likely to progress.

Yet, in the face of these obvious evolutionary politico-economic movements and the basic psychological facts that govern intelligent human action, medical education is still demanding for every individual admitted to the study of any branch of the science and art of medicine a high standard of preparatory education, in substance a B. A. degree from a recognized educational institution.

This standard, combined with the principles of education that are employed in every medical college after admission to study is such that it can be justly claimed that the educational methods pursued tend to make the graduate physician in this work-a-day world pursue the practice of medicine as a pure science, that can isolate itself, that needs no association with the applied sciences, especially economics. For instance, medical education during all these years has apparently never conceived of the practical necessity of recognizing the psychological fact No. 1. as a pre-educational factor of the utmost importance.

The United States Government, on the other hand, by the present war has been unceremoniously forced into recognizing its educational value—as evidenced by the first standard of admission to the aviation service, where the highest possible human skill is required in order to successfully destroy life. In this initial examination the most accurate possible physical and mental tests are employed in order to ascertain not only the inherent character and personality of the candidate, but more especially the acuteness, stability and durability of every one of his senses.

In the profession of medicine, however, where there is a demand, if it were possible, for even greater character and personality, acuteness, stability and durability of the senses—the object of the physician being to preserve life—no recognition is given to the fact that effi-

ciency in applying abstract knowledge depends upon the efficiency, not of one but all of the special senses.

The student of medicine may be deficient in one or more of his special senses, have little tactile sensibility, a poor sense of smell or hearing, defective eyesight, little character and no personality adaptable to a physician. Yet no tests are made to ascertain or correct these defects, and the student is graduated and permitted without any organized supervision to try to preserve—where he would not on the same grounds be permitted to destroy—life.

As to the educational value of the psychological fact No. 2, there can be no question that the mechanical aids to scientific medicine (which include all laboratory methods, even history filing and compilation may be added) have become so numerous, have so developed in detail that to attain efficiency requires not general but definite technical knowledge.

There can be no question that medicine will become organized in the future, and when so organized it can be no exception to the general rule and must attain efficiency by having sub-division of labor—therefore organization of labor and equipment.

Medical education as conducted to-day may be ethical but it is still decidedly theoretical. Medical schools virtually only graduate officers and then only colonels. No provision is made for officers of lesser rank for the privates in the form of technicians. For privates, we as a profession, must take the unsuccessful physician, volunteer nurse, half-trained office girls, or any kind of unskilled help available, whom each physician must train for himself after his own sweet will in order to fill the ranks of scientific medicine with privates. Yet economic organization is staring the profession in the face. With this army thus organized we guarantee to defend the public from disease—then wonder why our efforts as a profession are not appreciated!

Even the colonel, who may later wish and be willing to work for a higher rank—for instance, to become a specialist—there is no institution provided where through concentration of skilled leaders, equipment, technical assistance and economic organization he can learn his specialty from A to *Z*, and be instructed and equipped with a modified plan of economic organization, whereby he can do justice to the public and his profession by maintaining and delivering the high standard of goods which he advertises to sell in competition with the inferior grades of the cults by attaching to his name an "M. D."

As a profession, in most of our medical colleges, we unquestionably try to manufacture a high standard of goods, which goods must be sold in the open market to the public. We advertise to the public that the sign "M.D." signifies the highest standard. Yet as a profession have we adopted any organized means whereby we can demonstrate to the buyers, the laity, the value of standard "A" as compared with the imitation "B," and in so doing increase the demand for standard "A" goods, to the benefit of both producer and consumer? I think not.

The public through universal education is being taught to think, to reason, yet the medical profession today, like the cults, is asking the public to accept goods on faith without investigation; and we claim as a standard science based on reason, not wholly on faith.

If the profession of medicine will not undertake to solve these politico-economic problems for itself, it is true that evolutionary forces will solve them for us, but with brute force and a corresponding indiscriminate destruction—unless man employs the intelligence that nature has given him to anticipate evolutionary movements, through the use of intelligence scientifically applied but governed by the higher human emotions.

It is not within the limits of this letter even to outline the means to the end that experience suggests. But the old adage always proves true that where there's a will there's a way.

The object of this letter is to arouse, with your assistance, sufficient sentiment to instigate a systematic, organized movement to attain the end sought—the practical application of ethical economics; so that humanity may be efficiently served by the profession of medicine, and the profession win universal respect and attain efficiency through following out not only ethically but economically the dictates of the noblest of all the sciences.

The accompanying pamphlet is intended to prove that such a movement is feasible, for if an imperfect, experimental organization, based on a belief in principles, carried on by an individual, can apply these principles of ethical economics successfully, certainly with the intelligence of the profession concentrated towards that end there can be no question of the outcome of the many economic problems confronting the science of medicine.

Criticism of this pamphlet is invited, and the writer would appreciate notice or information of any criticism or suggestion—direct or indirect—that may be offered.

Respectfully submitted,

G. S. Peterkin, M. D.

PROGRESS IN MEDICINE AND SURGERY

CONGENITAL DISLOCATION OF THE HIP: Clarence L. Starr (The Canadian Medical Association Journal) briefly gives a history, the etiology, the pathology, symptoms, diagnosis and treatment of this interesting condition.

Until the past two decades, practically nothing was done toward treatment of this condition. At first, open operative methods were used by Hoffs, Paci and Lorenz, and these men obtained the Pathological study of the condition and developed the manipulative method.

ETIOLOGY.—The cause of this condition, which is found, according to Ledamaiy, occurs only in the human fetus, is due to mechanical pressure. The thighs being flexed and adducted in utero tends to make pressure on the posterior wall of the acetabulum, causing it to become ovolid instead of round, also a certain degree of twist in the neck of the femur takes place, permitting the neck of the femur to ride upon the anterior margin of the acetabulum producing a leverage

which tends to throw the head completely out of the socket.

PATHOLOGY.—The bony changes are a shaallow ovoid acetabulum, a twist in the head of the femur, the head of the femur being flattened out. The capsular ligament is thickened and elongated. The ligamentum teres often disappear. The adductor muscles are shortened.

SYMPTOMS.—Recognized when child begins to walk with the characteristic waddle gait and lordosis of the spine. In double congenital dislocations the symptoms are more prominent.

The diagnosis is easy. The history, the gait, the looseness of the head of the femur, with a radiogram, makes the diagnosis complete.

TREATMENT.—In the author's experience about seventy-five per cent of the cases under eight years of age, can be reduced by manipulation, and a perfect anatomical and functional result obtained. In some five per cent operative reduction was necessary. The chief hindrance in these was due to thickened and contracted condition of the capsule. The author follows a modified Lorenz method, using as little force as necessary to replace the head. The limb is put up in moderate abduction, and inward rotation, avoiding the difficulty of overcoming the subsequent extreme rotation of the limb. The child is put upon it's feet, as soon as possible, and in two to three months the limb brought down parallel with it's fellow. The author has been able to anatomically cure seventy-five per cent of his cases, to get a good functional result in ten per cent more due to anterior transposition. Some five per cent have been subjected to operative interference with good results. The remaining have been un-improved or have resulted in ankylosis. C. C. Chatterton.

CASE OF ORCHITIS AND DEAFNESS: Dan McKenzie (Proceedings of the Royal Society of Medicine, Vol. XI, No. 9), reports a case of unusual interest. A male, age 62, consulted him giving the following history: A few weeks previously he had an attack of "influenza," temperature 104 degrees Fahrenheit, with general muscular aching. A week afterward he had recovered from this attack and returned to business. One morning he discovered that he had become completely deaf in one ear. He had no previous ear trouble of any sort nor were there symptoms other than deafness either before or after the attack.

Clinical findings: Hearing in right ear completely abolished, left ear normal; tuning fork on right mastoid referred to left ear. Noise apparatus applied to left ear proved to total deafness of right ear; spontaneous nystagmus when looking to either side but within physiological limits. Caloric reaction normal.

Upon cross-examination, the patient states that during his attack of influenza his testes became enlarged one after the other without any previous complaint to account for it. It then occured to the author that his so-called "influenza" was an attack of mumps that had spared the salivary glands but attacked the testes.

The deafness in mumps is not infrequently unilateral and its onset, though sudden, is unaccompanied by vertigo. The nature and situation of the lesion in deafness as a result of mumps is as yet unknown, but it would appear that the virus selects the acoustic and spares the vestibular apparatus.

It is important, therefore, in cases of unilateral or bilateral deafness arising suddenly to ascertain if there is a previous history of mumps or orchitis, the latter arising as a complication of mumps or from no ascertainable cause. Paul D. Berrisford.

MAGNESIUM SULPHATE SOLUTIONS IN THE TREATMENT OF SPASTIC CONTRACTURES OF THE RECTUM AND SIGMOID COLON: Horace W. Soper, M. D. (Am. Jour. Med. Sc. Aug. 1918). maintains that muscular contractions in the rectum and lower colon as revealed by the sigmoidscope are pathologic in character and are etiologic factors in many cases of chronic obstinate constipation.

He quotes the theory as expounded by Meltzer that intestinal peristalsis results from the contraction of the proximal portion and relaxation of the distal portion of a section of intestine and that the action of Mg. So4 is due to its inhibitory action on the peristaltic movements of the bowel.

The purgative action of Mg. SO4 when given by mouth is due to its being converted into Sodium Sulphate and Magnesium Carbonate, substances which increase the irritability of the exciting or contractile phase of the bowel, while the remaining unconverted Mg. SO4 acts by increasing the inhibiting or relaxing phase of peristalsis.

From the foregoing he deduces that a condition of hypertonus or contracture in any portion of the bowel is due to a disturbance of the law of the intestine and the persistence of the contractile phase.

He mentions some 2,000 cases of obstinate constipation which have come under his care during the past 10 years, more than half of which were of the spastic type.

Quite a large number of these latter he has treated during the past year by means of Mg. SO4 local applications with the restoration of normal colon function in many cases.

He does not claim permanency for the method because the time is too short, but thinks the plan a hopeful one.

In making a diagnosis of spastic colon or contractures, he puts main reliance on the proctosigmoidoscope, the history of fragmentary feces and the palpation of a small contracted tender descending colon.

The X-ray gives misleading pictures and is therefore unreliable.

His method is to use a saturated solution of Mg. SO4 and make local applications with a cotton swab through the sigmoidoscope with the patient in the knee chest position.

The local treatments are repeated every second day, the intervals lengthened as the condition improves.

Cases require 10-30 treatments. No cathartics or enemata are allowed. When the contracture lies beyond the reach of the sigmoidoscope, a small catheter is inserted and two ounces of the Mg. SO4 solution is run in with the patient kept in the knee chest position for several minutes.

The method is also of often dramatic help in the relief of post operative abdominal distension and gas pains. Here three ounces saturated solution Mg. SO4 is run into the bowel by means of the rectal tube passed up 4-5 inches, hips elevated, and held as long as possible. This may be repeated daily or several times a day.

Large quantities of flatus are expelled and defecation often follows without pain or rectal tenesmus. The enema is usually retained for but five minutes. Occasionally however, it may be held for twenty-four hours, no harm results as no toxic effects have been noted (Meltzer warns against giving too large a dose as toxic effects have been observed particularly in animal experimentation.)

No evidence of increased peristalsis occurs. The Mg. SO4 solution evidently merely relaxes the contracted rectum and lower sigmoid and allows the retained gases and fecal matter to pass out of the distended colon.

Charles N. Hensel.

INDICATIONS FOR OPERATION IN GLAUCOMA: William Campbell Posey (Pennsylvania Med. Jour., Vol. XXI, No. 5) agrees as must most ophthalmologists that the profession at large are somewhat divided in considering the treatment of glaucoma, due no doubt, to the many operations advocated for the relief or cure of the disease.

His conclusions formulated in 1915 are still held and the indications for operation in glaucoma are:

1. In all cases of acute and subacute glaucoma and in all chronic cases or on the manifestation of any inflamatory glaucomatous symptoms.

2. In all cases of chronic glaucoma in which there is doubt of the patients' co-operation in the persistence of the miotic treatment throughout the remainder of life. This includes practically all hospital cases and such private patients as may be of a weak and vacillating disposition.

3. In all patients with chronic glaucoma who reside at such distance from centres where proper ophthalmic care may be obtained that they are unable to report at sufficiently frequent intervals for the supervision necessary for the proper and safe carrying out of the miotic treatment or for operation in the event that inflammatory symptoms arise.

4. In chronic cases where the patients are under 55 years of age when the field of vision and central vision are good, an operation on the most affected eye is advised, miotics being employed in both the operated and unoperated eye for the remainder of life. Operation on the second eye should follow if subsequent observation shows that vision is maintained better in the operated than the unoperated eye.

5. In all cases of chronic glaucoma without regard to age or the development of the disease, in which miotics have been given a faithful trial for at least six weeks or two months, as evidenced by the constant maintenance of pupillary contraction to almost pinpoint size and in which vision and the field of vision show progressive deterioration.

In cases not included under the above five headings miotics should be employed with great zealousness and persistence four times a day and if treatment is carried out along the lines indicated the gloomy prognosis for sight so often rendered in cases of chronic glaucoma is unnecessary and unwarranted.

Cyclodialysis and trephining should be performed in all cases in which operation is demanded if there be hemorrhagic tendency or the field of vision is very much reduced.

Iridectomy is the procedure of choice in all other cases. From Posey's own experience and that of others, trephining is usually a more dangerous procedure than iridectomy on account of the opacification of the lens that follows in not a small proportion of cases either immediately or remotely after the operation, and the danger of accidental infections in the subsequent course of the case.

That trephining has the power to lower tension no one can deny, but that it is the most potent known operative measure in securing and retaining sight, conservative observation of a large number of cases will alone prove.

George C. Dittman.

A BACTERIAL TOXIN AS THE CAUSE OF RETINAL HEMORRHAGE: F. Park Lewis (Jour. A. M. A., Vol. 70, No. 24)cites cases of retinal hemorrhage in which the etiological factors are conclusively proven to be of bacterial origin, the invading organism being streptococcus hemolyticus in all cases. The removal of the infection occasioned complete cessation of hemorrhage. In every case of hemorrhage of the eyeball some form of focal infection had been found.

The author states that retinal hemorrhages are not dependent on blood pressure. They may be associated with, but not directly caused by, arteriosclerosis, albuminuria, diabetes, or other diseases of metabolism, or focal infections. The organism most commonly present is the streptococcus and frequently found is the streptococcus hemolyticus. The hemorrhage produced is not the result of force from behind but is due to softening of tissues of the capillary or arterial walls by local action of this toxin or lysis.

This conception has not been heretofore recognized and the reason for the conclusions reached will be briefly given. That our fundamental knowledge of the cause of retinal hemorrhage is still exceedingly indefinite is shown in a review of our most recent literature.

The author quoting other sources states: "it is a symptomatic condition which must be evaluated according to concomitant factors." It is vitally important that the dependent factors for the change in vascular tissue

be known, for upon its understanding is based our whole conception of the actual etiology, and therefore, prognosis and treatment.

It is here urged that that which actually occurs is the absorption into the blood of a soluble protein poison, usually given off from a focal infection, which has a solvent effect on the intercellular cement substance of the cell wall, and that the hemorrhage is not due to alteration of the blood pressure but to local lysis in the wall itself.

An added importance to the subject lies in our understanding not alone of hemorrhage within the eye, but also hemorrhage elsewhere in the body.

If, as would seem, this is what actually occurs, the recognition of this newer pathology will enable us to seek the origin of the focal nidus producing this tragic disaster instead of wasting valuable time in eliminatives that can have no direct effect whatsoever on the disease.

GEORGE DITTMAN.

THE MEASLES PROBLEM: Charles Herrman, M. D. (Archives of Pediatrics, Dec., 1917) finds that with the possible exception of whooping cough and epidemic catarrh, no other communicable disease of childhood is more difficult to control than measles. The notification of the Department of Health is important for statistical purposes, and together with the placarding of the apartment in which the case occurs, is valuable in inducing the other tenants and neighbors to keep their children away from all the children of the family in which measles occurs. The difficulty is that the primary case has already infected them before it is recognized.

Most of the statistics of morbidity and mortality from measles are unreliable. Depending on the regulations of the local Department of Health, from 25 to 50 per cent of all cases are not reported. Many patients are never seen by a physician. But the great difficulty in the prophylaxis still lies in the fact that the disease is highly and most communicable before the eruption appears, that is, at a time when in most instances its presence is not even suspected. Prophylactic measures which begin with the appearance of the eruption are of no value.

All children who have had an attack of measles, and have been under the care of a physician, should receive a certificate. This should be kept, so that if a case of measles occurs later in the same family, the child need not be excluded from school; and the susceptibles and non-susceptibles will be known. When a case of measles occurs in one of the classrooms, all the susceptible children should be examined regularly. The regular weighing of all the children, in order to detect the loss in weight during the latter part of the period of incubation is difficult to carry out in the public schools, and is unreliable. If it were possible to take the temperature of all susceptibles several times a day, it would be of distinct value in detecting the initial rise, and isolating the patients early; but this is hardly possible in our public schools. Some years ago the writer suggested a method which he believes is more practical, namely, the daily examination of the mouths of all susceptibles, in those classes in which a case of measles has occurred, especial attention being given from the tenth day after the primary case developed, at which time the first symptoms will show themselves in the secondary cases.

It is a well recognized fact that the mortality from measles is much greater in hospitals and in other institutions than in private practice. The chief disadvantages of hospital treatment are, the danger of cross infection, and the lack of individual care. Only in rare and exceptional cases is it impossible to keep the child at home. Those who advocate the hospitalization of the majority of cases of measles, in institutions that are properly constructed for the purpose, and are able to give the most modern and approved care, forget the expense which this would entail. Even in the poorest surroundings the danger of cross infection is avoided.

After years of observation of the spread of measles, the writer is convinced that a real control, and a distinct reduction in morbidity and mortality, is impossible with our present prophylactic measures. A true control can only be obtained by the immunization of infants against the disease.

The author has now immunized 122 infants, and in not a single case was there any unfavorable effect. It goes without saying that the proper precautions must be observed. In conclusion, he again emphasizes the fact, that the child with measles should not be sent to the hospital.

C. E. SMITH, JR.

SENSITIZED VACCINES IN THE PROPHYLAXIS AND TREATMENT OF INFECTIONS: Russell L. Cecil, M. D., Major, U. S. M. R. C. (The Amer. Jour. of the Med. Sci., June, 1918) points out that a sensitized vaccine is a suspension of bacteria which has been previously treated with an homologous serum. The administration of sensitized vaccine has sometimes been referred to as sero-vaccination or "combined active-passive immunization." Both of these terms are misleading: the former because the serum is removed by washing the bacteria before they are injected, the latter for the reason that the immunity produced is probably entirely active. Whatever antibody is present in the vaccine is firmly attached to the bacteria, and whatever value sensitization of a vaccine possesses probably inheres from the

direct influence of the antibody on the bacteria to which it is attached.

A great deal has been written during the past decade about vaccines, but in spite of this vaccine therapy still remains an empirical procedure. It has been repeatedly demonstrated that the injection of killed bacteria into a healthy animal calls forth the manufacture of various antibodies and that a state of immunity is thereby produced. The exact effect, however, of vaccination in the case of an infected animal or human being is not known, for the reason that no method has been worked out for studying the effect of vaccine in experimentally infected individuals. The expectations of Wright that the opsonic index would prove a reliable guide in the administration of vaccine have not been realized. At the present time the only guide is the condition of the patient. We do know that in a considerable number of cases the use of vaccine is followed by the improvement or recovery of the patient. The same may be said of sensitized vaccines. It has been maintained by Besredka, Barbat and Meyer, Gay and Claypole, and others that vaccination with sensitized typhoid bacilli produces a high grade of immunity, higher than that following the injection of non-sensitized bacilli. Furthermore, it has been demonstrated by Barbat and Meyer that sensitized vaccines excite a very active production of bacteriotropic bodies, while the agglutinins, bacteriolysins and complement-fixation bodies are stimulated very slightly if at all. On the other hand, the immunity attained by injections of non-sensitized typhoid bacilli is actively bacteriolytic and only slightly bacteriotropic in character. The explanation offered by Garbat and Meyer for these differences was that by means of sensitization the typhoid bacilli and their immune bodies (amboceptors) are combined so that when injected into an animal they are ready for immediate attack and destruction by the complement; whereas with the injection of non-sensitized bacteria the tissue cells must first elaborate the various antibodies before the bacteria can be sensitized (in vivo) and broken up. Garbat suggests that if the injection of ordinary vaccine causes a bacteriolytic reaction and the administration of sensitized vaccine a bacteriotropic response it might be advisable in prophylactic vaccination to inoculate individuals with both kinds.

By this same reasoning one can account for the lesser toxicity of sensitized vaccine, on the ground that sensitization renders the bacteria more susceptible to complement, and, accordingly, more capable of rapid disintegration into harmless products. It is, of course, important that sensitization of the bacteria should be complete. In order to make certain of this an excess quantity of a serum of high titer should be used and plenty of time allowed for the firm binding of bacteria with antibody. If there is not time to immunize rabbits, some of the patient's blood may be withdrawn and the vaccine sensitized with the patient's own serum.

The question whether one should use a sensitized vaccine in the living form is an important one. With the streptococcus viridans, pneumococcus and gonococcus the living sensitized virus (in the writer's experience) is harmless when injected subcutaneously. With the staphylococcus aureus the writer should be rather afraid of furuncles in spite of the work of Broughton-Alcock. With the typhoid bacillus one should not forget the recent work of Nichols. Nichols has shown that Metchnikoff and Besredka's living sensitized vaccine produces a typhoid cholecystitis when injected directly into the gall-bladder of rabbits and is therefore infectious.

The increased time and labor necessary for the preparation of a sensitized vaccine naturally leads one to ask the question: Is the superiority of sensitized vaccine sufficiently marked to justify such an expenditure? In the majority of cases, no.

In the case of the typhoid bacillus the sensitized living vaccine of Besredka is infectious and is capable of producing cholecystitis in rabbits. The local reaction produced by the sensitized vaccine is slightly milder than that caused by the non-sensitized vaccine, but the difference, after all, is inconsiderable. The figures of Nichols show that in practical use on patients there is very little difference in the protective power of the two. At the present time, therefore, we are hardly justified in giving up a well-tried agent like the non-sensitized typhoid vaccine and substituting a sensitized vaccine, the efficacy of which has not yet been thoroughly established.

The writer's therapeutic results with sensitized gonococcus vaccine were not so brilliant as to impress him with their great superiority to the non-sensitized vaccine. His limited experience with sensitized streptococcus and staphylococcus vaccine does not allow of conclusions, but he should feel about these as about the gonococcus—that if sensitized vaccine was ever indicated it would be only after ordinary vaccine had failed.

The writer entertains skepticism about sensitized tuberculin. Granted that the so-called immune serum could be produced (a rather generous concession) there would probably be considerable deterioration in the imported product, no doubt several months old, when purchased in the market. Of course the latter difficulty could be overcome by substituting a domestic preparation. This same product, "S. B. E.," has been used with tolerable success by A. C. Burnham. As with other forms of tuberculin the results are not so good in pulmonary as in "surgical" tuberculosis.

It has been shown by numerous investigators that a vaccine sensitized with an homologous serum produces less local and constitutional disturbance when

injected subcutaneously than does a non-sensitized vaccine. Even living virulent organisms when properly sensitized can be injected subcutaneously without serious consequences.

It has been maintained by some that sensitized bacteria, either living or dead, produce a more rapid and efficient immunity than non-sensitized bacteria do. This question, however, cannot be considered settled as yet.

Sensitized vaccines have been extensively used for prophylactic and therapeutic purposes.

The author has employed sensitized vaccines in a series of 47 cases, which include 20 cases of prophylactic vaccination against typhoid fever, and 27 cases of therapeutic vaccination against gonococcus, streptococcus, staphylococcus aureus and tuberculous infections. The sensitized typhoid vaccine produces a somewhat milder reaction than ordinary typhoid vaccine, and probably gives just as high an immunity. At the present time, however, the evidence for its superiority is not sufficient to justify the substitution of sensitized for ordinary vaccine in practice.

In the various infections treated with sensitized vaccines the results were, as a rule, no better than would have been expected with ordinary vaccine. It happened that in a few instances recovery followed the administration of sensitized vaccine after treatment with ordinary vaccine had failed. This may have been due to the fact that larger doses could be employed without untoward symptoms.

The chief objection to the general use of sensitized vaccines is the increased labor and time necessary for their preparation.

At the present time it would seem desirable to limit their use to the treatment of infections in which there is hypersensitiveness to ordinary vaccines or in which the latter have proved inefficacious.

E. T. F. Richards.

BOOK REVIEWS

INTRODUCTION TO NEUROLOGY. (By C. Judson Herrick, Ph. D., Professor of Neurology in the University of Chicago. Second Edition. Reset. 12mo of 394 pages. 140 illustrations. Published by W. B. Saunders Company, Philadelphia and London, 1918. Price, $2.00.)

This book is a thoroughly, up-to-date introduction to Neurology. The materials presented are arranged in three groups: Chapters I to VII discuss the more general neurological topics; Chapters VIII to XVIII comprise a brief account of the form of the nervous system and the functional significance of its chief subdivisions in general, explaining the more important functional systems. The third division is devoted to the cerebral cortex and its functions.

Special care has been taken in preparing the index, and with it is combined a brief glossary of technical terms.

The book can be highly recommended to the student the general practitioner, and the specialist. C. M. Dovre.

PRINCIPLES AND PRACTICE OF OBSTETRICS. (By Joseph B. DeLee, A.M., M.D., Professor of Obstetrics at the Northwestern University Medical School. Third Edition, thoroughly revised. Published by W. B. Saunders Company, Philadelphia and London, 1918. Price, $8.50)

This is a volume of 1089 pages with 949 illustrations, 187 of which are in colors.

The general plan, outline and scope of this edition are not unlike that of the former editions, but each subject and chapter has been brought up to date in regard to theory, knowledge and treatment.

All the illustrations are excellent and the new ones are illucidating beyond the power of words.

Any student or practitioner wishing a good, reliable and up-to-date treatise on the general subject of obstetrics cannot do better than to provide himself with this excellent book. Albert G. Schulze.

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ORIGINAL ARTICLES

LATE RESULTS IN STOMACH SURGERY*

Arnold Schwyzer, M. D.
St. Paul, Minn.

This paper was prepared for two reasons; first, because one hears repeatedly that the surgeons do not give enough information on the late results in their stomach cases, and second, because it was hoped that a complete picture of one's practice, including all the doubtful cases as they present themselves, might be of some interest. That the material is quite modest deprives it of a statistical value in the face of the most wonderful experience of others in our midst, but on the other hand it allows of a comprehensive bird's eye view. I went back to January 1904. It is about 14 years since the posterior gastro-enterostomy was introduced by Czerny and Petersen. Since that time stomach surgery has not changed materially in any way except that it became much more popular among a more proficient profession and a more alert public.

In this study we did not include the few gastrostomies, as they were done for oesophagus conditions. Unless greatly desired by the patient, they are worthless.

Our material during the mentioned period comprises:

Carcinoma of the stomach, 26 cases with 1 death.

Ulcers, including strictures of pylorus, 76 cases with 1 death.

Acute perforations of ulcers, 15 cases with 4 deaths.

Ptosis and dilatation without definite stricture, 13 cases with no deaths.

Unclassified cases, mostly indistinct indications, 9 cases with 2 deaths.

Total: 139 cases with 8 deaths.

Carcinoma of the Stomach

Nine times a gastro-enterostomy was performed, which was followed in two cases later by a resection of the stomach. Gastro-enterostomy for cancerous pyloric obstruction is, of course, of little benefit, though our patients felt better at least for a short time, if we except one, who, after an apparently prompt operative recovery, left the hospital in ten days but died one month later with an abscess of the abdominal wall. To mention the other extreme in result: one case, operated in May 1913, had gained thirty pounds 5 weeks after the operation, and only died in Feb. 1917. The carcinoma, situated at the pylorus, seemed definite at the time of the operation.

Among the 17 resections of the stomach (partial gastrectomies) there was 1 death due to the advanced cachexia with oedema. The case should have been left to die without operation. In the other cases the operative recovery was prompt and smooth. Needless to say that the carcinoma was demonstrated by the microscope in every instance. Arranged according to the degree of result, the cases are as follows:

Eight cases, which were almost too far advanced for operation, were bettered for only a short time. One of them left the hospital in 6 days, feeling happy over his improvement, though the mesocolon was involved already. Of the second I find the assistant's note: Simplest convalescence. He went back to work for a few months. The third one, a woman, who had a large resec-

*Presented before the Minnesota State Medical Association, August 29-30, 1918, Duluth, Minn.

tion for a carcinoma gelatinosum, was operated upon in May 1915, then did her housework all that summer, felt pretty well in December, but in April 1916 reported that she vomited at times; a recurrence could then be felt. A fourth case, a pyloric carcinoma with glandular involvement, gained 19 pounds in six weeks, but died 10 months later. A fifth one with a splendid recovery, left the hospital after 6 days, gained 35 pounds in 31 days, but died 13 months later. Of a sixth one I can only get the information that he improved after the operation, but I soon lost track of him. A seventh case was very happy for 6 months, then a gradual return of his trouble was noticed. The case had really been too far advanced at the time of the operation. An eighth case, a woman operated in 1905, had a segmental mesogastric resection in one piece with the transverse colon and all of the omentum. She made a very elegant recovery, the happiness was greatest. Six days after the operation she was singing and two days later she was up in a chair. Two months after the operation she began to feel bad again, and promptly died one month from then.

Of a ninth case, a woman 41 years old, operated upon in May 1904, I have the information that for twelve months previous to the operation she had vomited, lost flesh and suffered quite steady pains in the stomach. The resected piece measured 10 cm. on the lesser, and 20 cm. on the greater curvature. She sat up in a chair after 3 days, and left the hospital in 2 weeks. Seven months after the operation I made the note that she looked brighter and younger. She then felt "fine" up to July 1905. In March 1906, 22 months after the operation, she wrote that she had no pain in the stomach, but that the food seemed to stop at the pit of the stomach, and that she had lost weight.

A tenth case was a woman who was operated upon last December. She feels very well so far. It was a carcinomatous ulcer near the pylorus.

An eleventh case (op. Feb. 1915) had come in a precarious exsanguinated condition. A gastro-enterostomy was performed and after four weeks this man had improved so much that, notwitstanding the advanced condition, a more radical measure was attempted, because the mass had been found to still be movable. On opening the abdomen the carcinoma was seen to be grown firmly to abdominal walls. During the manipulations the lumen of the stomach broke open. The carcinamatous mass was ulcerated through and thus had produced the adhesion to the abdominal wall, which was resected with the stomach. It became necessary to keep this hole closed by a sponge and constant finger pressure during the resection of the stomach. This patient made a surprisingly good recovery, was hale and hearty after two years. Dr. Schuldt, with whom I had this case, informs me that the man did light work until six months ago, at which time he was pinched between two street car doors. He had felt pretty well until then. A gastric fistula hereupon developed and the patient died three months ago, I presume with a recurrence.

A twelfth case, a man, who was operated on Sept. 27th, 1915, had again a too far advanced condition. The liver and the pancreas were slightly invaded by continuity. Since glands were, however, not involved to a marked degree, a resection was made. Liver substance, about $\frac{1}{2}$ cm. thick, was removed over a small area together with the tumor, also a small portion of pancreatic tissue. The symptoms previous to the operation dated back 3 years. He had vomited at first after meals only, later often, and any time. The patient now writes that he gets pains, when he eats certain things. He feels well, however, looks very well, and has not vomited since the operation. His average weight had been 140 pounds; 5 years before operation it had been 150; at the time of the operation 130 pounds; now it is again 150.

A thirteenth case was a woman 56 years old. She had had stomach trouble for 13 years with much pain and vomiting. She made a very smooth recovery, was able to leave the hospital 9 days after her operation. Five years before operation she had weighed 140 pounds, at the time of the operation 119 pounds, now 142 pounds. She eats everything and has not seen a doctor during the past year.

A fourteenth case, a man, was operated upon in April, 1915, for an ulcerated carcinoma

RESECTION OF STOMACH FOR CARCINOMA

	Condition at Operation	Operative Procedure	Date of Operation	Time in Hospital After Operation	Result	Summary Final Result
Case 1—Mr. R.	Mesocolon involved. Advanced carc. of pyloric area.	Gastrectomy with resection of mesocolon.	December 1909	6 Days	Very smooth operative recovery.	Improved for a short time only.
Case 2—Mr. Br. 67 years.	Advanced carc. near pylorus, invading lesser curvature far over to the left.	Gastrectomy with posterior gastroenterostomy.	November 1915		Simplest operative recovery; later went to work again for several months.	Improved for a short time only.
Case 3—Mrs. P.	Large carc. gelatinosum.	Resection.	May 1915		Much improved for eleven months, then a recurrence could be felt and vomiting reappeared.	Improved for a short time only.
Case 4—Mr. F. Age 37 years.	Carc. of pyloric portion.	Ant. gastro-enterostomy followed immediately by gastrectomy.	October 1916		Gained 19 lbs. in 6 weeks, vomiting stopped; died ten months later.	Improved for a short time only.
Case 5—Mr. Bo.	Carc. of pyloric portion.	Gastrectomy after ant. gastro-enterostomy had been done 6 weeks previously.	September 24, 1912	6 Days	Smoothest operative recovery; gained 35 lbs. in 31 days; died October, 1913.	Improved for a limited time only.
Case 6—Mr. St.	Carc. of pyloric area.	Resection.	January 1908		Was improved after operation: then soon lost track of.	Improved.
Case 7—Mr. Ph.	Carc. far advanced.	Resection.	February 1915		Was much better for 6 months, then gradual return of the symptoms.	Improved temporarily.
Case 8—Mrs. C. C. C.	Carc. involving middle portion of stomach, had grown to colon and meso-colon.	Mesogastric resection in one piece with transverse colon and omentum.	June 14, 1905		Smooth recovery from operation; died 3½ months later.	Improved temporarily.
Case 9—Mrs. J. N. S. 41 years.	Carc. of pyloric area, large.	Large resection, 10 cm. on lesser, 20 cm. on greater curvature.	May 17 1904	2 Weeks	Felt well for 14 months, then 22 months after operation beginning of symptoms of recurrence.	Temporary improvement.
Case 10—Mrs. G. 60 years.	Ulcus carcinomatosum at pylorus.	Comparatively large resection.	December 1917		Smooth operative recovery, feels well so far.	Well so far (9 months).
Case 11—Mr. G.	Carcinoma grown to abdominal wall; perforation anteriorly. Marked cachectic general appearance.	Resection. Gastroenterostomy had been done 4 weeks previously in exsanguinated condition.	February 1915		Surprisingly good recovery; worked for 3 years. Six months ago injury; gastric fistula and 3 months later death, probably with recurrence.	Well for 3 years, died after 3½ years.
Case 12—Mr. V, 60 years.	Carc. of pyloric half of stomach, adherent to liver and pancreas.	Resection of stomach together with small area of liver and pancreas tissue.	September 1915	18 Days	Smooth recovery. His weight 5 years before op. was 150 lbs., at time of op. 130, now 150 lbs. Feels well, pain, when eating food that does not agree; no vomiting.	Well after 3 years.
Case 13—Mrs. L., 56 years.	Carc. of pyloric area.	Resection, post. G. E.	April 10, 1915	9 Days	Uneventful recovery.	Well after 3¾ years.
Case 14—Mr. Br. 66 years.	Ulcerated carc. of posterior wall near pylorus. Stomach trouble for 3 years. For 1 year "awful" pain and vomiting.	Resection.	April 22, 1915	3 Weeks	Smooth recovery. Can not eat sweet things, otherwise feels well.	Well after 3¾ years.
Case 15—Mr. C, 60 years.	Pylorus carc. Had had stomach trouble for 25 years with vomiting.	Resection.	January 1915	2 Weeks	Smooth recovery. Weight at time of operation 125 lbs.; now 147 lbs.	Well after 3 years and 7 months.
Case 16—Mr. Sch. 60 years.	Carc. cylindro-cellulare size of woman's fist, on posterior wall near pylorus.	Extensive resection.	February 24, 1905	12 Days	Uneventful recovery. Weight had come down from 140 lbs. to 109, now 130-135 lbs. Works every day; no trouble.	Well for 13½ years.

on the posterior wall near the pylorus. It is thus three years and four months since the operation. He answers in the questionnaire, that he had had stomach trouble for three years previous to the operation, and that for one year before the operation he could not do any kind of work. Anything he ate would produce severe pain. He now cannot eat sweet things, but outside of this he declares to have no trouble.

A fifteenth case, a man of 60 years, had his gastrectomy in January 1915. He answers

that his stomach had troubled him for 25 years with vomiting in spells. He weighed 125 pounds at the time of operation, now he weighs 147. The operation relieved his symptoms. He had no pain in the abdomen for the past year, nor has he vomited. He states that he can eat everything and has not consulted a doctor since the operation.

The sixteenth case is well today after $13\frac{1}{2}$ years. It was a man of 60 years. He was operated on Feb. 24th, 1905. Since summer 1904 he had suffered from pain in the stomach. Loss of appetite. His weight came down from 140 pounds to 109. The carcinoma involved the pyloric area, and was the size of a woman's fist. An extensive resection was done at a good distance from the tumor. On the proximal side we had two inches of apparently normal stomach wall on the removed specimen. This was a deciding feature. Examination of the specimen revealed that, while the tumor mass protruded greatly into the lumen of the stomach and seemed at first sight well outlined, the bordering normal looking stomach wall showed on its cross-section some thickening which gradually diminished toward the outer regions. Microscopically it was found that, outward from the macroscopic tumor, the carcinoma extended for one inch in the submucosa. Another favourable feature was that we had to deal with an adenocarcinoma. These cylindrical cell carcinomata are known not to invade the glands as early as the other forms. This patient, who left the hospital after 12 days, is now over 73 years old, and is still working every day. He reports that he feels very well, has no trouble at all, and weighs from 130 to 135 pounds.

If we summarize these end results, we have:

Seven cases—far advanced ones—temporarily improved, but having recurrence or being dead within a year.

One case, after primary improvement, could not be traced.

One case felt well for 14 months; after 22 months signs of recurrence.

One case well after now nine months.

One case felt well for 3 years, then died six months later after an injury, most probably with recurrence.

One case living and apparently quite well after now 3 years.

Two cases well after 3 years and 4 months.

One case well after 3 years and 7 months.

One case well after $13\frac{1}{2}$ years.

Leaving out the case who is well, but operated only 9 months ago, there are 15 patients who could be traced. Of these six passed the three year limit and five of these are apparently free from recurrence so far. It is very evident from the histories that the chief and dominating factor which determines the results, is the advance of the growth. We all must clearly recognize the fact that, if we treat or "study" for any length of time a case with steady stomach symptoms that will not promptly improve under a very strict management, we are robbing our patient of the only factor which has any telling value.

Non-malignant Cases

The largest number of cases are represented by the ulcers including strictures. With exclusion of the acutely perforating cases this group comprises 76 cases.

In 3 cases a partial gastrectomy was performed. One of these, who had been suffering for 3 years previously, had lost 30 pounds. He had a thick fibromatous mass involving the pyloric area. Before removal it looked suspicious of carcinoma. This patient is entirely well for $4\frac{1}{2}$ years now and can eat all foods. The second and third cases of resection for ulcer had hypertrophic ulcers at the lesser curvature, one was operated upon $3\frac{1}{4}$ and the other $1\frac{3}{4}$ years ago. Both report themselves as well since the operation.

In one case only do I find the excision of a small deep, bottle-shaped ulcer at the pylorus. This excision was combined with a pyloroplasty according to Finney. It is $7\frac{1}{2}$ years since the operation. Upon our circular letter this patient writes that he has to take care of what food he eats; he cannot eat pork or dry white bread. He vomited 2 or 3 times during the last year with sour stomach and sick headaches. His condition is apparently not entirely relieved. He is a hard working man of moderate strength. He used to bloat before the operation which would make him faint. So a nervous element may be in this case. Nevertheless, he reports that the operation relieved his symptoms, which had consisted of a great deal of pain, bloating and regular vomiting soon after eating. Probably

a gastroenterostomy would have given better drainage and more rest to the ulcer-bearing area. Unless we have a simple stenosis of the pylorus without any recent open ulceration, the pyloroplasty does not give the same degree of relief as gastroenterostomy. There is surely often a moderate obstruction in the third and fourth portion of the duodenum which can be recognized when the size of the duodenum is compared with that of the jejunum. This latter is then quite often found empty and contracted, while the duodenum is filled and even ballooned. An angulation at the duodenojejunal junction, in other cases a pressure from the mesenteric vessels, etc., probably play their part.

In one such case we had an obstruction of the lower horizontal portion of the duodenum due to an inflammatory mass in the body of the pancreas.

The comparatively large group of drainage operations for ulcers and strictures contains eight gastro-enterostomies for ulcers of the lesser curvature;

Seven pyloroplasties after Finney for pyloric strictures;

One pyloroplasty (Finney) for congenital hypertrophic stenosis;

Twenty-five gastro-enterostomies for pyloric, and pyloro-duodenal ulcers;

Thirty-one gastro-enterostomies for definitely duodenal ulcers.

Total seventy-two.

The ulcers of the lesser curvature are known to yield to gastro-enterostomy less readily than those of the pylorus. Nevertheless, apart from the two above mentioned partial gastrectomies, we treated the 8 other cases of ulcer of the lesser curvature simply with gastro-enterostomy, one anterior and 7 posterior. The ulcer mostly formed a large thick mass. Arranged according to the degree of result, the cases are as follows:

Case 1: A woman, had a hemorrhage a week after the operation but made after this a good recovery. She could not be traced.

Case 2: A man operated in May 1917, reports that he had had stomach trouble for 10 years before operation, gas and pain after eating. Was 9 days in the hosptial. Weight 5 years before operation 160. At time of operation 156. Now 165. Since the operation he is partly relieved; he still has some pain and gas after eating. Meat, potatoes and coffee give some distress. He has not consulted a doctor within the last year.

Cases 3 and 4: One case was operated 10 months ago and another, 4 months ago. They are very well.

Case 5: A man of 60 years made a very happy recovery, felt well and gained much weight; but he died one year later of some cerebral condition.

Case 6: A young woman of 22 years with a mass quite suspicious looking, is well since $2\frac{1}{2}$ years.

Case 7: Was a very interesting case, a lady 53 years old. Seventeen years ago her abdomen had been opened, a tumor was found which was declared malignant and inoperable. The abdomen was closed. Six months later, the late Dr. Dunn of Minneapolis made a posterior gastro-enterostomy declaring the mass to be a hypertrophic ulcer of the pylorus. She was then well for $11\frac{1}{2}$ years. When I saw her, her old symptoms, pain and regular vomiting, had come back since about one year. X-ray showed an obliterated pylorus with nearly complete obliteration of the whole pars pylorica, furthermore, a niche of Haudeck far up on the lesser curvature. At the operation we found that though the gut was still broadly attached to the stomach, the gastro-enterostomy opening of the mucosa was closed down to an opening just large enough to admit an ordinary quill. The gut was separated from the stomach and at the same spot an extra large gastro-enterostomy was again made. The patient is now well for nearly four years and can eat everything.

Case 8: Had a strictured pylorus at the same time with his mass at the lesser curvature. Operated over $10\frac{1}{2}$ years ago, is now very well and happy; eats everything and writes an enthusiastic answer to our questionnaire, is "happy as a lark."

The cases 4, 5, 7 and 8 had at the same time a distinct stenosis of the outlet of the stomach. The prognosis as to relief was therefore at once better than in the others. In case seven there is little doubt that the ulcer far up on the lesser curvature (toward the posterior wall) was due to the retention, as it formed when the outlet became blocked.

Thus ulcers even far up on the lesser curvature have their relation to insufficient emptying of the stomach and gastro-enterostomy would appear to have its good foundation. Our highest authorities advocate excision of these ulcers, because the simple gastro-enterostomies did not satisfy in a sufficient degree. Others were, however, very successful with gastro-enterostomy alone.

Summarized, the outcome in our eight cases is: 1 not traced, 1 improved, and 6 well. Three of these cases were observed for more than two years after the operation; they are well today, after $2\frac{1}{2}$, 4 and $10\frac{1}{2}$ years respectively.

Pyloroplasties

While open pyloric ulcers are as a rule better treated by gastro-enterostomy, there are clean cut strictures of the pylorus where there appears no additional difficulty of transit in the course of the lower duodenum. In these a pyloroplasty, preferably after Finney's modification, reproduces a more ideal anatomic state. However, if the stomach was dilated for a long time, and if the tonus of the stomach wall is poor, the free and more direct drainage given by the gastro-enterostomy, brings better relief. Thus of late years we have drifted away from the pyloroplasty. Apart from a congenital stenosis, I find seven cases all operated by the Finney method. The information as to their present condition is the following:

Of two cases, operated upon in 1907 and 1908, I have no record, except that the operative recovery was good. Of a third case, a young woman operated in November, 1908, I only have the information, that her stomach was "quite well" two years later.

A fourth case reported eight years after his operation, that he again had pain two hours after eating and that his stomach was well, though he had gained from 120 to 155 pounds since the operation.

A fifth case, operated upon 10 years ago, reports occasional pain and frequent vomiting. He eats however, everything and has gained 15 pounds since the operation.

The sixth case was operated upon $13\frac{1}{2}$ years ago. He did not have a definitely clear condition. The stomach was large, the pylorus appeared distinctly, but not excessively stenosed. He had suffered from severest attacks of nausea. This patient could only be classed as moderately improved, though he wrote me two years after the operation that he thought the operation saved his life and that he had gained 35 pounds. Later on attacks of vomiting reappeared with entirely healthy and long intervals. The clinical picture now looks like a neurotic condition, and the meager result should hardly be charged to the particular method of operating.

The last case, a man of fifty-three years, operated $14\frac{1}{2}$ years ago (May 1904), reports that he is an entirely new man, has no pains, no indigestion, and eats all foods without any discomfort.

Thus of the five pyloroplasties which were traced, one was moderately and two were greatly improved, while two others were cured, one of them reporting himself as very well after 2, the other after more than 14 years.

In open ulcers the gastro-enterostomy is more preferable, unless, perhaps as mentioned in a case above. the ulcer is excised and the opening shaped into a pyloroplasty. But here again we sacrifice some of the clinical result to the sense of anatomic esthetics. There is, however, one condition, where a pyloroplasty is more appropriate than a gastro-enterostomy, and that is the congenital pyloric stenosis. I have only one case of this kind. This pyloroplasty was performed nine years ago. Since then the pyloroplasty without division of the mucosa has rightly become the accepted method.

The child weighed at birth $10\frac{1}{2}$ pounds. When it was three months old, it was brought for operation. It weighed then only 8 pounds. The condition was most miserable, though greatest care had been used by the physician. Three weeks after the operation the child only weighed 6 pounds and 15 ounces. One week later it was again 8 pounds. Two months after the operation it weighed $8\frac{3}{4}$ pounds; and from then on it steadily gained. When it was about two years old, the child was the picture of health. At the operation, which was done through a very small opening, we found the pylorus represented by a solid cord, $1\frac{1}{2}$ to 2 cm. long and as thick as "the tip of a lady's little finger." There

was no trace of fat anywhere. The omentum was reduced to a tiniest pseudomembrane-like remnant. The pyloric area could be lifted up and a simple rubber band was holding the lumina gently compressed. The bulky rigid pylorus was hard to sew and the anterior Lembert suture turned it in, in bulk, but enough lumen remained at the lower end. We felt, however, that it was necessary to go slow with the feeding for the first ten days.

Gastro-enterostomies in Pyloric Ulcers and Strictures

In this group are included the pyloro-duodenal ulcers, unless they were plainly duodenal. A number of these may thus really have been duodenal in the beginning. There are 25 cases in this group, no deaths. Our search for the end results was successful in only 22 cases. The three patients of whom we have no final report, had made good operative recoveries. In three cases there existed a thick mass at the pylorus. All three have reported. One is completely well after $5\frac{1}{2}$ years; has no pains or gas and eats everything. The second case, a lady, had her operation $7\frac{1}{3}$ years ago. She reports that after having had pains for 35 years that she could neither sleep nor eat reasonably, and much vomiting, she was relieved by the operation to a great extent. Six months ago she had pains, though not severe. They were relieved by medicine. She has some gas and does not eat much meat, coffee or warm bread. She is suffering from asthma. The third one of these hypertrophic ulcer cases, a boilermaker, is perfectly well after $13\frac{1}{2}$ years.

Two cases came to the hospital in an exsanguinated condition after copious bleeding. Both were middle aged men. In both cases, besides a posterior gastro-enterostomy, the prepyloric area was constricted and the arteries leading to the ulcer area tied at the upper and lower borders of stomach and duodenum. In either it seemed that any slight further bleeding would have been disastrous. Both cases made a good recovery. One of them was operated two years ago; he had been sick for three years. An ulcer, the size of a bean, was found on the posterior wall. Anterior gastro-enterostomy. He reports a gain of 20 pounds since the operation; he thus is within 5 pounds of his best weight. He is relieved of his symptoms, has no pain nor gas, eats all foods and is only somewhat afraid of meat. The other exsanguinated case was operated in Nov. 1913, and had to be operated upon again last April. It was on account of a tuberculous peritonitis. I thus had a chance to inspect the gastro-enterostomy, which was perfect. The pylorus after $4\frac{1}{2}$ years was still definitely closed by a beautiful round white cord, the remainder of the strip of fascia which we had taken from the edge of the wound and thrown around the anthrum. The ends of the strip had been fixed by two fine linen sutures. There were no adhesions from this cord. This goes to show that the operative constriction of the pylorus does not always give way, as it is claimed. The X-ray in our case shows that the food leaves by the gastro-enterostomy. This patient eats now every kind of food.

Of the remaining 17 cases, two, operated within a year, are well.

Of two others, operated $1\frac{1}{4}$ years ago, one is perfectly well, the other improved.

Two reported three years after the operation that the stomach was entirely well. In one of them we constricted the prepyloric area on account of threatening perforation.

One after $4\frac{3}{4}$ years feels well; has some gas when he eats cabbage or beans.

One after $5\frac{1}{2}$ years feels "fine."

Two after $5\frac{3}{4}$ years are well.

One after $6\frac{1}{4}$ years is well.

One after $7\frac{1}{4}$ years had to take care in selecting his food, has pain and vomits when he gets improper food on the days when he travels with his threshing machine from one farm to another. He works hard, has his normal weight, no gas or sour stomach, and feels well as long as the food is properly prepared.

Two cases after $7\frac{3}{4}$ years are well (one has occasionally sour stomach, but eats everything).

One case, a woman, operated $12\frac{1}{2}$ years ago, gained thirty-five pounds, and declares herself well, though she has an occasional slight pain under the right ribs.

One after $13\frac{1}{2}$ years is pretty well (neurotic woman). Before the operation she had what she called continuous vomiting, pains and hematemesis. She is working regularly now.

DUODENAL ULCERS AND STRICTURES

	Condition at Operation	Symptoms Before Operation	Date of Operation	Length of time in hospital	Nature of Operation	Result	Summary Final Result
Case 1—Lady, 35 Years.	Duodenal stricture from pericholecystitis.	Much distress. For one year frequent vomiting. Twice in hospital for stomach in that time. The last three months stomach washed daily once or twice.	January 1905	10 Weeks	Anterior Gastro-enterostomy and entero-anastomosis. Large gallstone removed by cholecystostomy.	Stormy recovery as drain was pulled out on third day. Gained 40 pounds since operation.	Very well for 13½ Years
Case 2—Lady, 51 Years.	Stenosis of third portion of Duodenum by pancreatitic mass.	Obstruction practically complete. Great weakness.	February 1905	9 Days	Anterior Gastro-enterostomy (G. E.) and entero-anastemosis.	Stomach remained good, but I had to operate for gallstones later on.	Very well for 13½ Years
Case 3—Man, About 40 Years Butcher	Ulcer.	Severe pain in stomach for eight years. Vomiting, much gas.	April 1908	14 Days	Posterior G. E. (numerous adhesions between gallbladder and duodenum).	A few days after operation a severe hemorrhage. Relieved of the vomiting and pain. Only when working very hard and food is improperly prepared he has pains. Gained his normal weight back. Weight 5 years before op. 145 to 155; at op. 140; now 152 pounds.	Greatly improved after 10 to 14 Years
Case 4—Man, 62 Years.	Ulcer on anterior wall 1 cm. below pylorus; adhesion to omentum and gallbladder.		March 1908	10 Days	Posterior G. E.; adhesions freed.	No report, except that operation convalescence was uneventful. Up in chair the day after the operation.	
Case 5—Man, 45 years. Storekeeper.	Ulcer 2 cm. below pylorus on ant. wall, size of finger nail. (Pylorus narrow.)	For two years "awful" pains two or more hours after eating, which then gradually increase. Vomiting.	March 1911	19 Days	Posterior G. E.	At times pain, never much, but can not eat all foods. Vomited once of late. Weight 5 years before op. 145, at op. 130; now 135.	Improved for 7½ Years
Case 6—Man, About 55 Years. Storekeeper.	Large inflammatory mass involving upper duodenum and pylorus.	Almost complete pyloric obstruction. Stomach trouble for 35 years.	October 1911	10 Days	Posterior G. E.	No pain, no gas, eats everything; "nothing bothers now." Weight 5 years before operation 119 pounds at op. 112; now 150 lbs.	Very well for 6½ Years
Case 7—Business Man, 61 Years Old.	Large mass on posterior wall of duodenum 1 in. below pylorus; Some suspicion of malignancy; stomach wall full of varicose veins.	Stomach trouble for many years.	May 1912	12 Days	Posterior G. E.	Up in chair after three days.	Very well for 6½ Years
Case 8—Man, Editor, About 50 Yearsold.	Ulcer.	Obstructing symptoms; pain for many years. Utter emaciation.	June 1912		Posterior G. E.	Works every day, feels very well.	Very well after 6 years
Case 9—Man.	Ulcer.	Attacks of severe pain for 10 years "eating did not seem to be the cause of it," pain later continuously, whether he ate or not. Vomiting.	November 1912	4 Weeks	Anterior G. E.	Gained 20 pounds beyond his normal weight. No trouble of any kind. Eats "anything and everything."	Very well for 5¾ Years
Case 10 Man.	Bleeding Ulcer.		December 1912		Posterior G. E.	Simple operative recovery.	
Case 11—Woman.	Duodenal ulcer, gallstones.	Terrible pain in stomach could hardly eat anything. Severe vomiting.	January 1913	14 Days	Posterior G. E. cholecystostomy.	Gained 30 pounds since operation. No vomiting, but some gas. Eats all foods.	Practically well for 5½ years
Case 12—Man, About 55 Years.	Pylorus and first portion of duodenum form one mass. Pancreas thickened in neighborhood. Great dilatation of stomach.	Stomach trouble for 20 years. Bloating, vomiting mostly in afternoon. Pain continuous for 3 weeks.	February 1913	13 Days	Posterior G. E.	Very fine recovery, eats everything, no pain, no gas. Weight 5 years before op. 175; at op. 145. now 168 lbs.	Very well for 5½ years.
Case 13—Lady.	Pyloric ulcer 3½ cm., below pylorus on outer posterior side.		December 1913	8 Days	Posterior G. E. appendectomy.	Very smooth operative recovery.	
Case 14—Man.	Ulcer on posterior wall, starting just below pylorus, size of ½ dollar, hard. Base of ulcer running into pancreas.	Stomach trouble for 2 years. Gas, vomiting, pain mostly at night.	February 1914	3 Weeks	Posterior G. E. Pylorus closed by fascia band.	Has no trouble now. No pain, no gas, eats "what comes on the table." Weight 5 years before op. 150; at op. 137; now 150 pounds.	Very well for 4½ years.
Case 15—Man, 33 years.	Ulcer on posterior, crater like.		February 1915	14 Days	Posterior G. E.	Severe hemorrhage 20 hours after operation. Now working on his homestead in Montana.	Apparently well after 3½ years.

	Condition at Operation	Symptoms Before Operation	Date of Operation	Length in Hospital	Nature of Operation	Result	Summary Final Result
Case 16—Lady, 26 years.	Ulcer crater like, 1½ cm. below pylorus. Cholecystitis.	Severe stomach pain 2 hours after eating for 2 years. Belching.	June 1915	12 Days	Posterior G. E. Cholecystectomy.	Declares her symptoms as relieved but still has distress after certain foods and occasionally, however only after exertion, right after eating. 138 pounds before op., at op. 128; now 137	Greatly improved for 3 years.
Case 17—Lady, 44 Years.	Ulcer, thickening anteriorly and externally, just beyond the stenosed pylorus.		September 1915	3 Weeks	Posterior G. E.	Lost track of after "uneventful recovery." Patient is reported as having died about a year ago. Cause?	
Case 18—Man, 50 Years.	Perforating ulcer on posterior wall, penetrating backward.	Long lasting misery from eating.	November 1915		Posterior G. E.	Operation was difficult in the very obese patient. Undue tension on account of bulky mesocolon. Died one week after the operation under peritonitic symptoms. No autopsy.	Died.
Case 19—Man.	Large infiltrated area of size of dollar with crater center of thumb nail size, center 5 cm. below pylorus on posterior wall.	Trouble for 25 to 30 years.	November 1915	13 Days	Posterior G. E.	Reports relief from all pain, no gas. Can eat any food without any trouble. Weight before op. 172; at op. 126; now 154 pounds.	Very well after 2¾ years
Case 20—Man. 28 years.	Bleeding ulcer size of finger nail.	Great misery after eating, for 8 years before operation. Anemic and thin.	March 1916	3 Weeks	Posterior G. E. Pylorus closed by suture.	When careless with his food he still has pains in cold weather. No belching or vomiting. Avoids beans and fats. Weight 5 years before op. 137; at op. 107; now, 125 pounds.	Greatly improved for 2½ years.
Case 21—Man, 27 years.	Ulcer on posterior wall.	Has pains for a long time almost constantly. They were relieved by eating. About 2 hours after eating pain, vomiting and belched gas.	June 1916	8 Days	Posterior G. E. Pylorus closed by sutures.	His pains have reappeared after awhile to some extent. No vomiting, but gas. Raw apples and meat distress. Weight 5 years before op. 160; at op. 130; now 141 pounds.	Improved for 2 years.
Case 22—Lady, 49 years.	Duodenal ulcer at pylorus posteriorly, edges thickened.	Stomach trouble for one year. Intense pain after eating. Gas, three times vomiting. At times would awake at 3 A. M. with intense pain and could not stay in bed.	June 1916	19 Days	Posterior G. E. Appendectomy.	Reports "absolute relief," never eats, however, very much at a time. Eats no pork or cabbage, otherwise most everything. No pains. Weight before op. 135; when leaving hospital 117; now 133 pounds.	Practically well for 2 years.
Case 23—Man, 32 years.	Ulcer.	For one year burning in stomach and gas 2 to 2½ hours after eating. Vomits frequently, at times brownish material. Pain relieved by eating.	June 1916	8 Days	Posterior G. E., closure of pylorus.	Very prompt recovery. Weight 5 years before operation 160; at op. 115; now 165. No discomfort of any kind. can eat anything.	Very well for 2 years.
Case 24—Man, 33 years.	Ulcer.	About nine years distress. More pain the last three weeks. Vomits. During the week preceding the operation he had 10 to 12 attacks of colicky pain in right hypochondrium lasting 30 minutes.	January 1917	14 Days	Posterior G. E., closure of pylorus.	No pain now, no gas. Eats everything "gladly." Weight 5 years before op. 178; at op 160; six months after op. 215. Now (working again) 193 pounds.	Very well for 1½ years.
Case 25—Man, 45 years.	Ulcer 2 cm. in diameter. Severe hemorrhage.	Severe distress for years. Patient is in exsanquinated by very copious hemorrhage.	January 1918	9 Days	Posterior G. E. Ligation of arteries, closure of pylorus.	Very prompt recovery.	Well since ½ year.
Case 26—Lady, 50 years.	Ulcer, not very definite exsanquinated condition.	Had severe hemorrhage, pain great.	February 1918		Posterior G. E.	Still severe anemia. no pain.	Moderately improved
Case 27—Man, 47 years.	Ulcer on posterior wall, hard, 3 cm. long, 1 cm. wide. Pancreas hard and thickened.	For 1 year pain, most noticeable 1 to 2 hours after eating. Eating relieves. Three to four times during this year he took a bread and milk diet for a week or two at a time. No vomiting.	February 1918	10 Days	Posterior G. E.		Well.

	Condition at Operation	Symptoms Before Operation	Date of Operation	Length of time in hospital	Nature of Operation	Result	Summary Final Result
Case 28—Man, 33 years.	Uncertain ulcer; exsanguinated condition.	Had severe hemorrhages 6 months previously. Much distress. Had improved under strict diet. Again copious hemorrhages just before operation.	March 1918	21 Days	Posterior G. E. Ligation of arterics.	Improved and felt better. Acute broncho pneumonia two months later from which he died under repeated hemorrhages.	Indifferent result.
Case 29—Man, 54 years.	Ulcer on the posterior with a crater in the center.	Distress for 30 years. Many ulcer treatments. Of late more severe and lasting pains.	March 1918	9 Days	Posterior G. E.	No trouble of any kind since the operation.	Well so far.
Case 30—Man, 32 years.	Ulcer, long and narrow, on anterior wall, 3 cm. by barely $\frac{2}{3}$ cm., starts just below pylorus, runs longitudinally with the gut. The duodeno-jejunal junction is far over to the left and the mesojejunum is thick and seems to produce a mild torsion. Appendix long, thin, kinked by adhesions.	Distress for one year.	April 1918	8 Days	Posterior G. E. Appendectomy.	Very smooth recovery.	Well so far.
Case 31—Lady, 28 years.	Ulcer 3 cm. below pylorus posteriorly, like half cherry with stone removed.	Misery for many years.	April 1918		Posterior G. E.	Very good recovery.	Well so far.

She had an anterior gastro-enterostomy with entero-anastomosis.

One, a man, after $14\frac{1}{2}$ years is in splendid health. He gained 59 pounds the first 2 years after the operation. He had an anterior gastro-enterostomy with entero-anastomosis, as was usual in those days.

In summing up, of 22 gastro-enterostomies for pyloric ulcers and strictures, the later elinical results were very good in 19, while the other 3 cases were at least markedly improved.

Gastro-enterostomies for Duodenal Ulcers

Where we were afraid in these eases, that perforation threatened or where bleeding had been maeroscopic, we usually closed the pylorus. In order to give an exact aecount of the after-results in these 31 cases an individual enumeration in the form of a chart was prepared.

In the table we find classified as:

Very well—16 cases observed for the following periods of time: $13\frac{1}{2}$ years, $13\frac{1}{2}$ years, $6\frac{3}{4}$, $6\frac{1}{4}$, 6, $5\frac{3}{4}$, $5\frac{1}{2}$, $4\frac{1}{2}$, $2\frac{3}{4}$, 2, $1\frac{1}{2}$ years, and five cases less than one year;

Practically well—3 eases observed for $5\frac{1}{2}$ $3\frac{1}{2}$ and 2 years;

Greatly improved—3 cases observed for $10\frac{1}{4}$, 3 and $2\frac{1}{2}$ years;

Improved—3 eases observed for $7\frac{1}{2}$, 2 years and one-half year;

Indifferent results—1 case;

Died—1 case;

No end result report—4 cases.

If we consider only the eases observed for more than one year after the operation, we have reports from 19 cases. Of these the two poorest results were classed as improved. One had had an ulcer on the posterior wall of the duodenum. For a long time he had been most constantly in pain, and had suffered from gas and vomiting. He reports that he still has gas and pain, more so when he catches cold, and that raw apples and meat distress him. He has no vomiting any more, and of the thirty pounds which he lost in the five years previous to the operation, he gained 11 pounds back in the two years since the operation. The other one of the cases elassed as improved, was operated $7\frac{1}{2}$ years ago; he feels pretty good, if he lives on a light diet. He gained 5 pounds since the operation; has at times pains, though never severe, while for two years before the operation he had suffered from "awful" pains and vomiting. This is the only insufficient result among the older cases. It is striking that the good reports came at least as much from the cases of long observation as from the recent ones.

PERFORATED ULCERS

A. PERFORATION LOCALIZED

	Operative Findings	Pre-operative Symptoms	Date of Operation	Operative Procedure	Post-operative Course	Summary Final Result
Case 1—Girl, 18 years.	(History lost.)	Patient was sent to hospital as emergency case with diagnosis of intestinal obstruction; bad condition; fever. Before op. stomach washed, Strychnin 1/30, Atropin 1/80, Morph. 1/6, according to chart.	September 1910	Anterior gastro-enterostomy.		Died.
Case 2—Young Woman.	Ulcer perforated, but sealed. Nevertheless peritonitic irritation. Stomach much dilated.	Ulcer misery for a long time. The day before the operation signs of perforation. Pain severe all over abdomen.	February 1911	Excision of prepyloric ulcer; Finney's pyloroplasty; gastroplication.	Good operative recovery. In 1914 nephropexy and appendectomy. Some complaint from time to time, not all due to stomach.	Pretty well after $7\frac{1}{2}$ years.
Case 3—Man.	Ulcer (pyloro-duodenal) perforated, sealed.		May 1912	Ulcer inverted, nothing further done.	Good recovery, observed for several months. Could not be found by questionnaire.	Not traced.
Case 4—Man.	Pyloric ulcer, perforated but lightly sealed.		November 1912	Closure and invertion of ulcer. Posterior gastro-enterostomy.	Weight five years before op. 149 lbs., at op. 127, now 172 lbs. No trouble of any kind, eats all foods.	Very well after $5\frac{3}{4}$ years.
Case 5—Young Woman.	Pyloric ulcer, perforated on anterior wall, sealed.		December 1912	Ulcer closed and covered by omentum. Posterior gastro-enterostomy.	Good operative recovery.	Not traced.
Case 6—Woman, 50 years.	Ulcer on anterior stomach wall; middle portion, midway between lesser and greater curvatures. Perforation of $\frac{1}{2}$ cm. diameter, sealed by omentum and fibrin. Large infiltration around it, 5 cm. in diameter.	Stomach trouble for months. For two days severe pain even on light touch.		The sealed ulcer is left undisturbed on account of the thick infiltration of the stomach wall. Posterior gastro-enterostomy.	Much improved for about six months, then condition stationary, and after one year jaundice with apparently a malignant condition.	Temporary improvement.
Case 7—Man, 28 years.	Duodenal ulcer, perforated but sealed.	Severe aortic and mitral insufficiency. Copious hemorrhages during two weeks preceeding the operation; enormous heart.	December 1916	Ulcer sewed over. Posterior gastro-enterostomy; upper and lower pyloric arteries ligated.	Bleeding again continuous after the operation. The lesions of the wildly pounding heart seem to have favored the bleeding. After two days death.	Died.

Three cases were classed as greatly improved. One of them, whose operation was over 10 years ago, had had severe pains and vomiting for eight years previous to the operation. He now has pain only when with his hard work he gets improperly prepared food. He declares his previous symptoms as relieved and has gained twelve pounds since the operation. The second case, a young woman suffering from a crater-like ulcer, had a cholecystectomy at the same time three years ago. Now she still has some distress after certain foods and occasionally vomits after exertion. She gained nine pounds and declares her symptoms as relieved by the operation. Finally the third case of those classed as "greatly improved" had suffered for eight years great misery after eating, was thin and anemic. His physician reports that he has no pains, when he is not unreasonable with his food. The patient says he avoids beans and fats. He gained 18 pounds since the operation $2\frac{1}{2}$ years ago.

Three cases were grouped as "practically well." One after $5\frac{1}{2}$ years with a gain of 30 pounds, eating all foods, only has some gas on the stomach. A second one is apparently well, working for $3\frac{1}{2}$ years on his homestead as bachelor farmer. The third one feels fine, has no trouble, but avoids pork and cabbage.

Finally there were eleven cases who are very happy, refusing to find any complaint.

In short, of the nineteen cases of duodenal ulcer treated by gastro-enterostomy and observed at least for $1\frac{1}{2}$ years or more, seventeen are satisfactory results with cure of the ulcer, while the remaining two were at least definitely improved in their symptoms. In the face of this experience it was surprising to me to read in a very recent article by Deaver, that gastro-enterostomy in duodenal ulcers does not give sufficient results and that he excises the ulcer whenever he can. In direct opposition to this view is the experience of Rutherford Morrison, who declares that gastro-enterostomy here

PERFORATED ULCERS

B. PERFORATION WITH DIFFUSE PERITONITIS

	Operative Findings	Pre-operative Symptoms	Date of Operation	Operative Procedure	Post-operative Course	Summary Final Result
Case 1—Young Woman, Nurse.	Acute perforation of pyloric ulcer. Turbid fluid in abdomen.	Stomach trouble for a long time. Perforation about 6 hours old.	April 1910	Ulcer sewed over; posterior G. E., no drain	For some time patient had to be kept on diet.	Very well after 8¼ years.
Case 2—Young Woman.	Pylorie ulcer. Perforation 8 hours old; occurred right after breakfast. Much material in peritoneal eavity.	Stomach trouble for a long time previously.	November 1912	Closure of ulcer; posterior G. E., no drain.	Very well for 5 years; then hemorrhage without pain. After strict diet good recovery.	Well after 5¾ years.
Case 3—Man, 48 years, Saloonkeeper.	Duodenal perforation; free soiling of abdominal cavity.	Stomach trouble "all his life," gas, pain after eating, vomiting. Periodical drinker.	February 1913	Closure of ulcer; posterior G. E., no drain.	Can eat nearly all foods; still gets off on periodical sprees. Weight 5 years before op. 160 lbs., at op. less, now 170 lbs.	Practically well after 5½ years.
Case 4—Man, About 36 years.	Pyloro-duodenal ulcer; free soiling of peritoneal eavity.	Previously operated for exophthalmic goiter. Stomach symptoms of recent date only.		Closure of ulcer; posterior G. E. Cholecystostomy for stones.	No gas, no pain, no sour stomach. Eats at liberty within reason. Weight five years before op. 136 lbs., at op. 124, now 162 lbs.	Very well after.
Case 5—Man, 52 years.	Duodenal perforation with old surrounding fibrino-purulent exudate; more recent general peritonitis.	Sick for 10 days with perforation, diagnosed by his physician; refused operation to the last.	November 1915	Closure of ulcer; posterior G. E., drainage.		Died.
Case 6—Man. 35 years	Duodenal perforation near pylorus; 6 hours old.	Stomach trouble for a long time before, but worked until perforation occurred.	October 1916	Closure of perforation, posterior G. E., no drain.	Patient had to be taken out of bed the day after the op. on account of profuse bronchorrhea, otherwise good recovery.	Very well after 1¾ years.
Case 7—Woman, 55 years.	Pyloro-duodenal perforation. Perforation gradual but two days old.	Sick for a long time with vague stomach symptoms.	March 1917	Closure of perforation, posterior G. E., no drain.	Very good recovery under strict diet.	Very well after 1½ years.
Case 8—Man, 43 years.	Perforation pyloro-duodenal; 4½ hours old. Profuse soiling of peritoneal eavity.	Treated for a long time, when perforation occurred unexpectedly.	February 1918	Closure of perforation, anterior G. E., drainage.	Peritonitis.	Died.

seldom fails. The closure of the pylorus in the bleeding cases always gave us a decided feeling of safety.

Perforated Ulcers

We will now consider the perforated ulcers; and here two groups ought to be made; one where the ulcer is sealed by fibrin or where at least the peritonitic process is localized to the immediate neighborhood by a protective agglutination; and a second group where the peritoneum is diffusely soiled with stomach contents. We consider in this group only the ulcers which perforated into the peritoneal cavity. Those perforating into the pancreas, the liver, etc., without involving the free peritoneum, are better called penetrating ulcers.

There were seven cases of perforated ulcers with a more or less localized process. One with a severe heart lesion died of hemorrhages, and another one died whose history could not be found, but who was brought to the hospital in a very bad condition of peritonitis and obstructive symptoms. Among the eight cases with free soiling of the peritoneum by stomach contents, there are two peritonitic deaths. The first one of these had a perforation of ten days standing. It apparently had first been a more localized process. The patient resisted operation firmly. Finally two days after apparently a rupture of this rather localized peritonitic exudate he was brought to the hospital after an eight hour railroad trip. It seemed necessary to add a gastro-enterostomy to insure drainage from the stomach. Patient died within 24 hours. A glimpse at the chart shows with one exception a gastro-enterostomy (or once a pyloroplasty) was added to the closure of the perforation—in all our cases. We always felt that, when the recognizable accumulations of fluid were once mopped out, what after that was lost in time by the gastro-enterostomy, was gained back by a more thorough sucking up of the remainder of fluid into the large gauze pads introduced into the Douglas pouch, the right kidney lodge, and often into the subdiaphragmatic space.

The second fatal case among those brought in with general peritonitis was operated 4½ hours after the onset of his acute perforation. He died after five days. The operation consisted of closure of the pyloro-duodenal ulcer and gastro-enterostomy. The patient had been treated for many months for ulcer by a physician of renown. At one-thirty one night he had an excruciating pain. At three A. M. the entire abdomen was found rigid and ¾-grains of morphin did not relieve the pain. Gas and about a quart of fluid, like pea soup in appearance, was found in the free peritoneal cavity. It was carefully mopped out and then allowed to soak into the gauze. The opening, of the size to admit a lead pencil, was closed with linen. The lesser peritoneal cavity was obliterated, therefore an anterior gastro-enterostomy was performed. One stab drain into the kidney pouch and one into the Douglas. Five days after the operation the patient died of peritonitis. Some of these cases die because, through long retention and dilatation, the stomach contents have become infectious and are teeming with bacteria, while under normal conditions the stomach and duodenal contents are sterile or at least rather harmless. Ulcerated teeth, etc., especially if they harbor virulent staphylococci, surely play a nefarious role, as it was shown long ago that the gastric secretion, while destroying many groups of pathogenic bacteria, does not kill the staphylococcus aureus. The two only cases that were drained, died. They were drained, because they were judged to be too far gone to be closed up. Did the drainage do harm? Perhaps this question cannot be answered in a general way, and would have to be decided for each individual patient.

Of the eleven remaining cases of perforation, two, after a very good operative recovery, could not be traced of late. Of the others, one was temporarily improved for about a year, then gave signs of malignancy. One is feeling pretty well after 7½ years. Seven report themselves as entirely well since the operation for the following periods of time: 1½, 1¾, 5, 5½, 5¾, 5¾ and 8⅓ years.

Ptosis and Dilatation Without Definite Stricture

There comes now for our consideration a group of cases which often are a crux medicorum. The surgeons as a rule are glad to leave these chronic sufferers to the care of their internal colleagues. The medical man gives them long rest cures with positional management, massage, tonics, stomach washings, belts, special diets and finally, if they refuse to improve, a change of climate. They are the cases with dilated and ptotic stomachs, weakness and emaciation, mostly neurotic women. We have treated all our cases medically for months and years with varying results, that is varying from modest success downward. Thirteen such cases were finally operated upon. Some had retention at intervals and therefore we made six times a gastro-enterostomy and twice a Finney. In all but one case we shortened these stomachs by the formation of transverse folds, like the valvulae conniventes of the jejunum. We devised this procedure, a trasverse gastroplication, as most of these stomachs are principally too long. The anterior surface was thus reefed by 3 or 4 transverse rows of interrupted linen sutures, starting near the cardia and ending not too near the pyloric grinding mill. This shortening stretched the lesser curvature and brought the pylorus to a more normal position. A shortening of the gastro-hepatic ligament may at times assist in relieving the pyloro-duodenal kink of these ptotic cases.

The chart shows that of our 13 cases we have end result reports from all but one.

Two are only slightly, if any, improved after 2 and 4⅓ years.

Two are improved after 3½ and 6½ years.

Four are greatly improved after 5¾, 6½, 6¾, and 7⅓ years.

One is practically well after 5½ years.

Three are very well after 5½, 9⅓ and 14 years.

The reports from these patients are really much better than one would expect them to be and we were rather surprised ourselves at the answers. None were harmed by the operation, practically all were at least somewhat improved, two thirds of them greatly. We must, of course, admit that the grouping of our cases is to a certain degree arbitrary, as it could only be done to the best of our knowl-

GASTROPTOSIS WITH DILATATION

	Condition at Operation	Symptoms Before Operation	Date of Operation	Time in Hospital	Nature of Operation	Outcome	Summary Final Result
Case 1—Girl, 17½ yrs.	Very dilated stomach, a kink at the pylorus, which is very moderately narrowed.	Extreme emaciation. Five feet 8 inches tall, weighing 68 pounds. Lies motionless in bed. Up to 10 ounces of thick mucus washed out of stomach each day. Marked retention of food.	September 1904	6 Weeks	Anterior gastro, enterostomy with entere anastomosis.	Two years later her stommach was pretty good, she was then 88 pounds. Then she kept gaining, now 137 pounds. At present she is the hardiest one in the family.	Very well for 14 years.
Case 2—Young Woman.	Pylorus not stenosed. No pathology found except elongation of the flabby stomach with ptosis.	Stomach trouble for 10 years, severe pains after eating followed by vomiting.	April 1909	10 Days	Transverse reefing of stomaeb and sbortening of gastro-hepatic ligament.	Gained 25 pounds (from 112 to 137) no vomiting. Eats everything except real sour things.	Very well for 9¾ years.
Case 3—Woman, About 40 years.	Great stomaeh misery for years. A great portion of it seemed produced by mental agony from family trouble.	Gastroptosis, pyloric stenosis stomach large.	March 1911	5 Weeks	Pyloroplasty after Finney. Reefing of stomaeb.	Pretty good improvement, eontinued mental distress, but no furthei treatment of stomach needed.	Mueh improved for 7¼ years.
Case 4—Young Woman.	Dilatation and ptosis, no other pathology found. Pylorus good.	Stomach distress for several years.	November 1911	3 Weeks	Reefing of stomach. Hemorrhoid operation.	Good reeovery. From time to time a little distress. Patient is quite satisfied. Of late years stomach good if eareful.	Greatly improved for 6¾ years.
Case 5—Woman, 45 years.	Dilatation and ptosis. Duodenum wide in eomparison to jejunum. No other patbology.	For many years delicate, gas and distress, at times in bed.	January 1912		Reefing and posterior Gastro-enterostomy.	Distinctly improved with times of distress again. Of late reported as pretty well.	Improved for 6½ years.
Case 6—Woman About 38 years.	Pylorus of normal size. Stomach ptotic and very large.	Stomach misery for many years, emaciation, great weakness.	February 1912	12 Days	Posterior Gastro-enterostomy and reefing of stomaeh.	Wrote repeated letters of thanks.	Greatly improved 6½ years.
Case 7—Seamstress, 42 years.	Stomach long and wide, ptosis. Pylorus somewbat narrow.	Stomaeb trouble for 10 years. Had bad stomach from childhood, declared berself an invalid, nausea, very much gas, many sinking spells caused from gas. No pains, however.	October 1912	2 Weeks	Finney and reefing of stomaeb.	Weigbt 5 years before op. 95; at op. 94; now, 100 pounds. Can eat better. Has very few sinking spells and "all my friends say I look better than I ever did." No pain, gas sometimes. Eats little meat, avoids pastry and fresh breads.	improved Greatly for 5¾ years.
Case 8—Woman, Married.	Stomach trouble for 1½ years. Pain, gas, burning of late, pain 10 to 20 minutes after eating. Certain foods distress. Afraid to eat. If sbe has sueh pains stools are black.	Relative stenosis of pyloris. No uleer found. Gastroptosis. Elongation of stomaeh. General visceroptosis. Liver distended several inebes.	December 1912	9 Days	Posterior Gastro-enterostomy. Reefing of stomaeh. (Three rows of suture.)	Weight 5 years before op. 105; at op. 95; now, 100 pounds, 7 weeks after childbirth. "No trouble at all." No gas, belching or sour stomach, can eat anything that eomes along.	Very well for 5½ years.
Case 9—Married Woman about 35 years.	Stomaeh trouble for two years, nausea, vomiting after every meal, pain under shoulder blade. Siek headaches, neurasthenia.	Dilatation of stomaeh. Pylorus stenoses. Omentum adherent.	February 1913	9 Days	Posterior or Gastro-enterostomy. Reefing of stomach.	No pain in stomaeb during past year. No sour stomach or belching or gas. "By being careful ean eat everything."	Practieally well for 5½ years.
Case 10—Woman.			February 1914		Reefing.	Good operative recovery. No later report.	No report.
Case 11—Woman, 45 years.	Stomach large and ptotie.	Stomach misery for over 10 years. Great emaciation exhaustion, very neurotie.	March 1914		Reefing.	Good operative recovery, moderate improvement.	Moderate improvement for 4½ years.
Case 12—Woman, 37 years.	Deseensus and elongation of stomach. Somewhat narrow pylorus lowest ileum loop tightly fixed downward by a veil.	Misery for many years. Great emaciation. Aueer mentality.	January 1915	19 Days	Exploratory operation. Pyloroplasty. Reefing and freeing of lowest ileum loop.	Improved rapidly. Gained appetite which she had not had for years. Later pretty good with bad spells in between.	Improved 3½ years.
Case 13—Woman About 25 years.	Stomaeb large, elongated. Ptosis.	Stomaeb trouble for 5 or 6 years. Bloating, much belehing, often eontinuous. Often pain in pit of stomach, usually about 1 hour after meals. Pregnancy since three months. Continuous nausea.	September 1916	2 Weeks	Reefing only.	Weight 5 years before op. 105; at op. 98 or 99; now 98 pounds. Relief "not to great extent." Eats all foods though some distress her more than others.	Moderate improvement 2 years.

edge. Some of the good results may have been hidden ulcers, which were favorably influenced by the drainage operation; others may have been better post but not propter operationem. Nevertheless, I feel that when medical management has completely been driven to the wall, an operative attempt is justified, if this justification is determined carefully.

Unclassified Cases

Into a last group I had to put some cases which could not well be classed with the others. They were nine instances of varied, I must say sometimes indistinct, or even doubtful indication. The report of some of them comes like a confession. In these our procedures must in fairness be explained by an earnest desire to help, when no help from other measures seemed to be in sight.

Two of these cases with unclassified indication died; one, an inveterate drinker with peripyloritis of recent date, died from his cardiac condition, which was aggravated principally by the narcosis. The other died of his advanced pulmonary tuberculosis.

One patient had severest vomiting spells and great gastric misery, finally profuse bloody vomiting. It was probably at least partly due to his lues, which was overlooked. The condition became so serious that it seemed proper to explore. Influenced by the alarming general condition, the hemorrhagic vomitus and the appearance of the pylorus, which was narrow and rigid, we made a gastro-enterostomy. This patient was very promptly and greatly improved. Before the operation his weight had been 135 pounds; while seven weeks later it was 149½ pounds. The improvement lasted for nearly a year, though no further treatment was used. After that the symptoms of paresis became quite outspoken, and after about another year he died from his paresis.

Four cases (1, 2, 5 and 6) were young women with very ominous symptoms, but practically negative findings. In young women negative gastric findings are well known not to be rare, even if the clinical picture appeared alarming. Moynihan had observed long ago that such symptoms princiaplly occur just before the menses. In our cases, which were observed for a good while, the pylorus seemed somewhat narrow and rigid or kinked. From the post-operative course it became rather probable that some ulceration existed or had existed. Three are distinctly improved at the present time, which is 6½ 10¼ and 13¼ years after the operation. One is only little improved after 6½ years.

Two patients (3 and 9) had a difficulty in the duodenum from pericholecystitic adhesions. Both are greatly improved. Thus it is shown again; the more definite the pathology—the better the result.

With this we have finished the report of our material since 1904. To sum up, we had 15 acute perforations of ulcers with 4 deaths, 27%. Grouped according to the operative procedures, we had among the other cases, including the carcinomata:

Eighty-six gastro-enterostomies, with 2 deaths, 2⅓%.

Thirteen pyloroplasties (Finney), with 1 death, 8%.

Thirteen gastroplications (partly with other op.), with no deaths, 0%.

Twenty resections, with 1 death, 5%.

It can easily be seen that percentage calculations need a larger material to produce a proper valuation of the relative danger of the different procedures.

In this paper we principally wanted to emphasize that the surgical results are not short-lived. Leaving aside all the cases which were observed for less than a year after the operation, we have, including the carcinomata, recent reports from 91. Of these are well, 62; greatly improved, 12; improved, 15; temporarily improved, 2.

When we consider only those observed for two years or longer, we have reports from 72. Of these are well, 49; greatly improved, 12; improved, 11.

Of the 47 cases observed 5 years or over, we find reported as well today, 31; greatly improved, 9; improved, 7.

Ten cases were observed for more than 12 years. Of these are today, well, 8; greatly improved, 1; improved, 1.

After sending the questionnaires and otherwise looking up our 106 discharged non-malignant cases, there were nine from whom we had no end-result information. Thus there remain 97 who could be traced. Among these, I was surprised to find only three who

UNCLASSIFIED CASES

	Symptoms Before Operation	Operative Findings	Date of Operation	Time in Hospital After Operation	Operative Procedure	Post-operative Course	Summary Final Result
Case 1—Young Woman, Nurse.	Stomach distress for months. Could eat but little; occasional vomiting, once bloody. Severe pain in epigastrium. On May 4, 1905, the temperature rises at 5 P. M. to 101 degrees, the pulse to 118. Patient feels very faint and seems to be at the end of her endurance; is taken to operating room.	Neither a subacute perforation nor an inflammatory condition was found. Pylorus patent, apparently a little narrowed. No ulcer or cicatrix found; gall bladder and appendix normal.	May 1905	4 Weeks	Posterior G. E. Opening made extra wide.	On fourth day up in chair. After a good vacation comes back feeling very well. Of late years feels pretty well, though at times spells of great abdominal misery occur due to drug habit and a highly neurotic condition.	Improved for 13¼ years.
Case 2—Young Woman, Teacher.	Ulcer symptoms for a long time; hemorrhage from stomach six months before op. Vomiting and misery; extreme emaciation. No solid food had been taken for six months.	Findings negative, except pylorus somewhat narrow.	May 1908	11 Days	Pyloroplasty. (Finney.)	Never quite comfortable since operation but reasonably well and able to work. In 1917 needed again magnesia and Sod. bicarb.	Improved for 10¼ years.
Case 3—Young Woman, Nurse.	Gastric distress and profuse hemorrhage. Stomach rejects even smallest quantities of food.	Gall bladder firmly grown to lower duodenum; gall stones. Apparently duodenum partly obstructed.	April 1908		Cholecystostomy anterior G. E. Gastrostomy for transgastric duodenal feeding.	(Case reported in Annals of Surg. Sept. 1910.) 1½ years after the op. she had gained from 88 lbs. to 121½ lbs. Of late good though not definite reports.	Greatly improved after 10¼ years.
Case 4—Man, 27 years.	Gastric complaints for months; severe vomiting spells. No relief. Profuse hemorrhage from stomach. Lues.	Pylorus patent, but narrow and rigid.	September 1911	9 Days	Posterior G. E.	Much better for about six months, then gradually more frequent spells of vomiting; later deliria; finally luetic paresis distinct. Death after about two years.	Temporary improvement.
Case 5—Young Woman, Married.	Gastric and nervous symptoms treated for many months. Ptosis. Vomiting and pain after eating; anorexia. Long rest in bed with postural treatment improved her for some time. Again hospital treatment. Toward the last the patient complained greatly, forcing some more decisive measures. On most gentle lavage with soft tube, blood noticed.	Pylorus fixed high up; jejunum entirely empty and contracted.	January 1912	19 Days	Posterior G. E.	Very satisfactory improvement at first for several months. Since then good and bad times alternate, though condition is improved.	Improved after 6½ years.
Case 6—Young Woman.	Stomach distress, vomiting becoming very severe, not relieved by any measures.	Stomach descended; omentum adherent to a former laparotomy wound. Pylorus narrow.	January 1912	19 Days	Omental adhesions freed. Posterior G.E.	Smooth operative recovery. Later the improvement appeared very moderate for many months. Patient now does all her work.	Little improved 6½ years.
Case 7—Man, 55 years.	Inveterate drinker. Stomach trouble for years. Severe pain and local tenderness epigastrium. Medical treatment had been of no avail. Food distresses and produces prompt vomiting. Urine 1013, no alb., no sugar. Pulse intermittent, but heart does not seem to preclude operation. Exploratory incision gladly accepted.	Widespread omental adhesions to abdominal walls. Adhesive perityphlitis. Pylorus narrow.	May 1912		Division of adhesions. Posterior G. E. though indication was indistinct.	Right after the operation cyanosed, pulse weak. Died after 24 hours from acute dilation of the myocarditic heart.	Died.

	Symptoms Before Operation	Operative Findings	Date of Operation	Time in Hospital After Operation	Operative Procedure	Post-operative Course	Summary Final Result
Case 8—Man, 46 years.	Pulmonary tuberculosis (open). Vomiting; severe epigastric pain and tenderness. Retains hardly any food. Apparently a difficulty at the pylorus. It was finally hoped to favorably influence the general condition by a drainage operation.	Pylorus stenosed, hard, though not a very pronounced condition. Adhesive bands surround the pylorus, and small tubercles are seen in the neighborhood.	November 1912		Pyloroplasty after Finney. Suture of abdominal walls in 3 layers, interrupted linen for fascia.	Severe coughing and profuse expectoration after operation. Nine days after operation the wound, which was 3½ inches long, began to fall apart and had a tuberculous appearance. Peritoneum still agglutinated. Renewed suture without anesthetic. The operation had almost completely relieved the stomach pain and the vomiting. However death from weakness under copious expectoration after three weeks.	Died.
Case 9—Man, Physician, 52 years.	Sixteen years ago cholecystostomy and removal of common duct stone. Of late years much stomach misery. Sour stomach. Uses lavage regularly for years. Abdominal hernia. Outspoken neurasthenia.	Widespread firm adhesions. Gall bladder imbedded in adhesions; pylorus apparently narrowed and distorted by the adhesions. Dilatation of stomach.	May 1918	2 Weeks	Cholecystectomy; posterior G. E. Repair of abdominal hernia.	Very good recovery.	Well so far.

subsequently died. These deaths were at least in two instances not connected with the stomach condition. Our study comprises 14½ years and many patients were of advanced age. The impression thus had to be that these patients had a very good average resistance, even if the nine untraced cases are considered as suspicious. The often heard objection, that these stomach patients even after a technically correct operation are reduced in their power of resistance, is a myth.

Furthermore, investigations like ours would indicate that the patient who is completely relieved of his symptoms for a year after the operation most always stays cured.

DISCUSSION

DR. E. S. JUDD, Rochester: The results Dr. Schwyzer has given tally almost exactly with those I was able to collect from our statistics in the short time I had to look them up. I find in our records of the study of cases of cancer of the stomach for a period of twenty years, that of 427 patients operated on, and who recovered from the operation, we have been able to trace 311, and 120 of these are alive three years or more. Of 313 cases operated on more than five years, 239 were traced; 62 were alive more than five years, 35 lived more than six years, 7 more than ten years and one lived more than fifteen years. Therefore, in comparing the statistics of results of operations for cancer of the stomach with cancer elsewhere, as in the breast or colon and other regions, they are found very favorable.

Regarding ulcer, our results from simple gastroenterostomy for ulcer of the duodenum, especially if there is some obstruction produced by scarring and narrowing of the duodenum, have been very satisfactory. If we have to deal with an ulcer of the bleeding type, excision of the ulcer should be included and a plastic done. We have supposed that gastric ulcer should be excised or destroyed by cautery when possible, and in addition a gastroenterostomy should be performed. In cases of gastric ulcer in which gastroenterostomy is not done at the time the ulcer is excised or cauterized, thirty-two per cent of the patients have had to have gastroenterostomies before they were completely relieved. While gastric ulcer will be partially cured either by excision or gastroenterostomy alone, much more satisfactory results may be obtained by doing both.

In looking up some charts in the clinic yesterday afternoon I found a series of 1327 duodenal ulcers and 330 gastric ulcers studied as a comparative series. It was interesting to note, in reviewing our statistics, the relative similarity of the results of operation in cases of duodenal and gastric ulcers. I had thought that the results in duodenal ulcer would be rather better than in gastric ulcer.

In cases of duodenal and gastric ulcer after gastroenterostomy, when symptoms have subsided entirely for a year or more and then returned, it is much more apt to mean that a secondary ulcer has formed than that a reactivity of the primary ulcer has occured. The factor of reactivity has been eliminated to quite an extent by the use of the absorbable suture, in place of a permanent suture, as advised by Dr. Charles Mayo. The permanent suture acts as a foreign body in the tissues. The occurence of secondary ulcer is reduced by soda or some alkaline substance given to the pa-

tient soon after gastroenterostomy, for the purpose of keeping the contents of the stomach alkaline, and to hasten the healing process, so that there may be no destruction of tissue around the suture line at that time.

DR. CHARLES H. MAYO, Rochester: Dr. Schwyzer's paper is very important, showing as it does the results of years of surgical work. He has taken up certain questions as to the results of operation for cancer of the stomach, and these questions naturally bring up the type of cancer operated on, and whether or not the lymphatics were involved. The late J. B. Murphy stated that in one institution in which over one hundred and fifty necropsies were made on persons dying of cancer of the stomach, none of whom had been operated on, twenty-five per cent showed that the cancer was wholly confined to the stomach, Death had been due to obstruction or perforation, and from secondary changes that occured due to the growth. In three-fourths of the cases the glands were involved, and the metastases and other complications at the time of death showed that operation would have been of no avail, at least shortly before death.

We assume that up to the time of operation, twenty-five per cent of all cancers of the stomach are confined to that organ, and that in these cases we get a high percentage of recoveries from operative procedures. The percentage of recoveries is higher than it is in cancer of the breast, because the breast does not hold the cancer locally. The disease early extends into the lymphatics in most instances. There are then, in advanced cases of cancer, the metastatic grafts that come from the surface of the stomach, and those that develop behind the bladder in the male, and in the cul-de-sac and in the ovaries in the female. These may often be felt by an examination through the rectum. They also occur in the neck from involvement through the chyle ducts.

A curious feature which presents itself is the fact that so many cancers occur in the stomach, the greatest acid field in all the body. Thirty-eight per cent of the cancers in the male and twenty-two per cent of all cancers in the female occur in the stomach. The field of least frequency is the duodenum, which contains the alkalinity of Brunner's glands, whose function it is to neutralize the acid chyme of the stomach before it reaches the alkaline digestive field supplied by the pancreatic secretion. Although contiguous to the stomach, the disease almost never occurs in this alkaline area, but in all the acid fields it occurs with remarkable frequency.

In the three great generative fields of the body the secondary development of acidity from degenerative processes occurs. The mammary gland and the uterus have about thirty-seven years of functional activity, and the prostate has about ten years more. In these fields are two factors which enter into the development of cancer, a biochemic acidity which occurs in the degenerative processes and which must be present in order that the cancer cell may run riot in its growth.

I should like to say just a word about the Finney pyloroplasty. The Finney operation overcomes the retention of the gastric secretion by opening up the pylorus, but it does not neutralize the acids. It overcomes the retention of the gastric secretion after all food has left the stomach, and food probably leaves the stomach, not by the control of the acid, but by the control of the alkalies. Excess of alkalies will cause the pylorus to open and to stay open. In the Kehr operation with bile drainage the pylorus is open. Alkalinity controls the pylorus, and if it is kept open, the retention of the irritating gastric secretion will be avoided.

DR. F. A. DUNSMOOR, Minneapolis: I want to go on record as thoroughly endorsing and giving my approval to the results reported by the essayist. I heartily endorse the position which he takes that these questionable ulcers should always be removed, if possible, at the time the gastroenterostomy is made, and I understand from the comments of the two gentlemen who followed (Drs. Judd and Mayo) that the doctor may subsequently perform an operation for malignant disease after gastroenterostomy. I take it, the increased mortality followed after long standing malignant disease. Whether he determined that the deaths which occured during that time were due to cancer or not, I do not know, because it is possible that a large number of these patients who lived as long as ten or thirteen years after operation had the opportunity of dying from some other disease than cancer and must have been positively cured, as the essayist stated, and had given good resistance in spite of the operation and the disease, which had previously existed in the stomach region itself.

Let me mention one other point which has occured to me, namely, the fact that gastroenterostomy sometimes allows the formation of another ulcer. I know this has occured in my own experience. I have seen Dr. William Mayo once or twice reopen at the site of the former operation and enlarge the opening which had been made between the stomach and intestine in order that the good result previously obtained might continue. Is it not possible that we are at fault and have not arrived at the best way of maintaining the fenestrum between the intestine and stomach to insure permanency of the fistula obtained?

One point mentioned by Dr. Mayo has puzzled me because he stated that the life of cancer in the stomach in a large measure depends upon the hyperacidity present, but is it not true that since cancer is present the acidity disappears and alkalinity is present or there is an absence of hyperacidity in the stomach?

The large percentage of cures related by Dr. Schwyzer which lasted a long time in cases of malignant disease have been especially comforting to me.

As to the fact that a new ulcer forms at the site of benign disease, I would like to hear reports from men of large experience as to how many times in any of these cases does malignant disease follow on the site of an indurated ulcer.

The essayist mentioned the fact that in his experience the benefit is not so great when the ulcer is limited to the lesser curvature of the stomach. If that be true, and he had the opportunity of making excision, I hope

when he sums up he will mention why he did not make the excision as long as he found an area from which he could not expect to get benefit from internal remedies.

DR. W. H. MAGIE, Duluth: I would like to say a word or two about the late results which my experience has taught me in stomach surgery, particularly surgery for ulcer of the duodenum or stomach.

All surgeons agree that in the majority of cases the late results, as well as the primary results, are very satisfactory, but every once in a while we get a case that we wish we had never had anything to do with because the late results are so very unsatisfactory, that we would be glad to get rid of the patient in some way.

The question comes up, what are the causes of the unsatisfactory late results? In the few cases that I have had, there has been some defect either at the pyloric outlet or a defect at the gastro-enterostomy anastomosis. In most of my cases there has been a tendency for the opening to close. In the early days when we made use of the "Murphy Button," after six or seven years the majority of the cases had a tendency to close, but after we began the stitching operation, there was less tendency for the opening to close. I found that in some of my cases there was tendency for the gut(the jejunum) to fold back upon itself, become adherent, causing an obstruction at the outlet. This I overcome by releasing the kink of the jejunum and stitching it along under the gastro-colic omentum, thereby preventing the jejunum from again becoming kinked. Usually the results after correcting operation were satisfactory.

There was a time when we were instructed by our teachers in stomach surgery that it would be best to bring the gastro-colic omentum down and sew below the line of sutures of the gastro-enterostomy. We did that for some years and I found that a number of patients began to get symptoms of obstruction again, due to contraction of the slit in the gastro-colic omentum pinching the outlet. About this time I came to the conclusion that the old technique was better and began to stitch the gastro-colic omentum back on the wall of the stomach about three-fourths of an inch from the gastroenterostomy. My experience, consequently, in unsatisfactory late results are due usually to some obstruction at the anastomosis preventing the free emptying of the stomach.

I would like to say a word about the perforating cases the doctor reports. He reports sixteen cases of acute perforation of the stomach with only four deaths. These results are very gratifying. I think the old teachers told us that fifty per cent recovered if operated upon within the first twelve hours. I wish to add two cases of acute perforated ulcer cases of the stomach that I have had recently which brought to my mind the necessity of early diagnosis. Practically all these cases can be cured if operated on early. I mean by this, that within the first four, five or six hours. The symptoms of acute perforation are so clear and so well defined that the attending medical man after seeing a case or two can easily make the diagnosis. It is true, however, that the symproms are often mistaken for those of appendicitis, but the symptoms of appendicitis are not so acute as perforation of the stomach. There we have the board like appearance of the abdomen with the extreme pain that is not relieved by large doses of morphine hypodermically. These symptoms develop within four to six hours and should not be mistaken for the symptoms of appendicitis. These cases if they can be diagnosed early and operated upon early, about ninety per cent of the cases can be cured. There is no reason why they should die if we operate early, incising the ulcer and closing the hole followed by washing out abdominal cavity and freeing it from all gastric juice and stomach contents. The gastric juice has a very destructive effect on the peritoneum, and produces the violent symptoms.

DR. SCHWYZER (closing): First of all, I want to thank the gentlemen for their free discussion, and especially Dr. Judd for taking the trouble to look up some of his material.

He mentioned the operative procedure adopted in bleeding cases. I did not have the time to read any details of the technic, but in bleeding duodenal ulcers or in those with previous extensive bleeding I have always made it a practice to tie the upper and lower arteries near the ulcer, and to add a constriction of the pylorus above the ulcer. In this respect I wish to mention an interesting case, whose abdomen I had a chance to inspect after such an operation. This happened six months ago, when we re-operated for another reason. The patient had suffered from a peritoneal tuberculosis. Four and a half years previously I did a constriction of the pylorus (besides a posterior gastro-enterostomy) on this patient who was very exsanguinated from a bleeding duodenal ulcer. We took a strip of fascia from the edge of the rectus sheath, and put it around the pylorus. Two linen sutures were used to fasten the ends of the strip together. Now, after four and a half years there were no adhesions from the previous operation and the fascia band was round, white and shiny. There were no adhesions over it and the pylorus was still closed after these four and a half years.

Dr. Mayo made the statement that twenty-five per cent of the unoperated cancers showed no glandular involvement to speak of at autopsy. This is an important fact to know, and this was probably the reason why I have a long cure of thirteen and a half years in one case, notwithstanding the large size of the carcinomatous tumor.

As to the Finney operation, to which one of the gentlemen referred: while Finney himself has splendid results, there is often a difficulty in the lower part of the duodenum, not necessarily severe. Sometimes the comparison between duodenum and jejunum shows a striking difference, the former appears ballooned and distended, while the latter is collapsed, empty and contracted. In these cases a gastro-enterostomy is, of course, necessary.

Dr. Dunsmoor mentioned that we did not have as good results in ulcers of the lesser curvature of the stomach; but I think he misunderstood me. The opinion

of many authorities is that it is best to excise these ulcers and make a gastro-enterostomy in addition, rather than to do a gastro-enterostomy alone. In our ten cases we have twice made a resection of the stomach, while in the other eight cases a simple gastro-enterostomy was performed, which resulted in six cures and one improvement. One case could not be traced.

With regard to the technic referred to by Dr. Magie, there is a point worth mentioning. In the gastro-enterostomy for ulcer of the lesser curvature the stomach is pulled as much as feasible through the slit in the meso-colon, to make a pouch, if possible the size of a woman's fist. The meso-colon is fastened away up on the stomach. I feel, this was a point which helped a prompt emptying of the stomach.

DR. DUNSMOOR: I understand that if an ulcer does persist, it will do so until perforation has taken place. Do you ever in your operations, as you go on, anticipate that, after you take out the ulcer, and put a picee of omentum over that?

DR. SCHWYZER: If we have a threatening perforation of the duodenum, we close the pylorus and infold the ulcer; or in a bad pylorius we may do a resection of the stomach, if it appears necessary.

RECTAL SURGERY UNDER LOCAL ANESTHESIA*

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Surgical pathology in the region of the rectum and anus is very common and a comparatively large variety of diseases is seen in this location. Many of these diseases have an insidious onset and discomfort is tolerated for long periods before relief is sought. The symptoms are rarely in direct proportion to the pathology obtaining, and too often, conditions demanding surgical therapy are neglected because an operation is feared. These patients, therefore, are slow to seek medical advice, and advice is too often given without thorough examination and correct diagnosis.

While the conditions encountered seldom cause total disability, they are the source of much distress to the patient and make a profound impression upon the nervous system. The difficulty of handling rectal cases, especially those in which the patient is addicted to alcohol, under general anesthesia without approximating the danger zone has led to the increasing use of local anesthesia in this class of cases. The ease with which the perirectal area may be anesthetized with local anesthesia, the comparative safety of novocain, and the facility with which operative procedures may be carried out under this type of anesthesia, should influence a large number of these unfortunates to seek the relief they now forego on account of their aversion to the usual methods of treatment.

It is difficult to understand why the profession has been so slow to accept local anesthesia as an aid to handling this class of cases. It is probably due to their lack of familiarity with the method and the prevalent idea that it involves a complicated, detailed technic, considerable time and discomfort to the patient. With proper equipment and technic the element of time is so reduced as to become a negligible feature, approximately three to five minutes being required in the average case. The operation may, therefore, be started sooner after the patient has reached the table than is usual when a general anesthetic is administrated. Aside from the features of time and facility, the element of safety, which is by far the most important, must be considered. The relative safety of novocain as compared with general anesthetics at once makes its use desirable when practicable. The technic is simple and a working knowledge of it easily acquired, one method practically sufficing for a great variety of rectal operations. Abscesses, fistulae, fissures, hemorrhoids, pruritis, ulcers, prolapsus of moderate degree and minor neoplasms are handled under the same technic as far as the method of producing anesthesia is concerned.

In recent years direct infiltration has had to compete in popularity with parasacral anesthesia. The latter method has many points of excellence and approaches the ideal for a large class of surgical cases. We have used it rather extensively, but find the direct blocking more satisfactory for ordinary rectal work. We prefer the direct infiltration, for with it one is assured of obtaining good anesthesia as there is no margin of error. Complete anesthesia is not always obtained with parasacral injection and in about 10 per cent. of cases direct infiltration or general anesthesia must be supplemented. There is always the possibility that anatomical anomalies, etc.,

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may present difficulty in entering the sacral canal; ordinary needles may be broken and the injection may produce a considerable amount of discomfort. Work may be begun at once after direct blocking, while a delay of from ten to twenty minutes is necessary before anesthesia is established after parasacral injection.

Preparation of the patient. The preparation of the patient for rectal work differs in no way from the general plan followed when other surgical work is to be done except that the intestinal tract is more completely emptied by laxatives and enemata. Good rest is obtained the night preceding operation by administering some hypnotic. An opiate, generally pantopon in one-third grain dose, is given as soon as the patient awakens on the morning of operation, and is usually repeated half an hour before operation. The patient is carefully transported to the operating room by means of the Invalid Lifter, and deposited upon the operating table which is equipped with feather pillows and adjustable knee-holders. A perfectly comfortable position is essential and all irritating applications such as iodin and alcohol are avoided, as is washing with soap and water. The anesthesia is begun by making a small wheal in the skin with a very fine needle an inch or more from the anal margin. All subsequent wheals are made from beneath the skin by making the point of the needle impinge upon the fingertip as illustrated. This method prevents the pain of successive needle pricks and is essential to successful local anesthesia. The pain of frequent pricks at the very beginning of the infiltration will reduce the patient's confidence, which may be a minus quantity, and cause him to exaggerate any discomfort which may be occasioned by one's subsequent slip in the technic. After the anal canal has been surrounded by this subdermal infiltration, the deep injection is made by introducing the needle through this infiltrated area at some little distance from the bowel wall. Injecting at some distance from the bowel wall requires a greater amount of the drug, but has the advantage of avoiding the large veins so numerous in this region. With a four-inch needle a tube-shaped wall of anesthesia is introduced to a depth of from three to four inches posteriorly and laterally, and less deeply in front. Usually about three ounces of 0.5 of 1 per cent. novocain are used in this process. A fenestrated rectal speculum can now be painlessly introduced and with it the rectum is slightly dilated. If this procedure causes the slightest sensation of pain, another tube of anesthesia within the first may be built directly under the eye by the introduction of the needle through the fenestra of the dilator. In making this injection one must actually see the fluid elevate the mucosa; otherwise, one is not certain that a vein is not being injected. Of course, the needle must be kept constantly moving while the injection is being made. With the aid of the Pneumatic Injectors the fluid is under a constant measured pressure and a steady, uniform flow is maintained, saturating the tissues. The amount of fluid required to produce a perfect anesthesia in this region is so small that the question of toxicity is practically eliminated.

It is our belief that a careful divulsion of the rectal sphincter is desirable in all cases. The after-pain and disagreeableness are greatly reduced by complete divulsion of the sphincter which, however, must be done with the utmost care and deliberation. If the infiltration has been satisfactorily accomplished the sphincter may be dilated without the slightest degree of pain. The dilatation may be made with the fingers or thumbs, but we prefer to use the speculum shown. The outer surfaces of this speculum are perfectly smooth; with the aid of the thumb-screw the dilatation may be effected with the greatest deliberation and should be continued until the sphincter ceases to contract and the rectum is left gaping. When the lateral limits have been reached, a Sims speculum may be used anteriorly to aid; this gives a three-way instead of a two-way pull.

Hemorrhoids. I have on a number of occasions used the method of Pennington in the treatment of hemorrhoids, directly attacking the dilated rectal veins after elevating the mucous membrane; however, in the majority of cases, I believe that the actual cautery gives the maximum of satisfaction. After a complete divulsion, the pile groups, usually three in number corresponding to the three groups

of vessels, are grasped by artery forceps. Two forceps are used upon each group, one near the anal margin and the other well up in the bowel, and all groups are identified and secured before any of them are cauterized. With a scissors a muco-cutaneous incision is made at the base of each pile, separating the skin from the mucous surface. This allows the pile clamp to fall between these two surfaces during the cauterization, and besides preventing burning of the skin, this effectually excludes the skin from participating in the healing process, thereby eliminating one of the most potent causes of postoperative pain. In placing the clamp the upper group should be taken first to avoid the necessity of holding the forceps out of the way. Traction must be carefully avoided after the first group has been cauterized in order to guard against hemorrhage. We have found a sheet of asbestos the best safeguard against accidental burning and the ordinary soldering iron a satisfactory cautery. Multiple punctures in the perirectal region reduce the post-operative edema.

Ulcers. Ulcers are, perhaps, best handled by complete excision followed by suture with chromicized gut. The great redundancy of mucous membrane in this locality makes this a simple procedure after a good exposure has been obtained by means of a thorough divulsion of the sphincter. It has been our custom to make the excision with the speculum in place and to place the first suture at the upper end of the defect remaining before the speculum is removed. By making traction upon this suture the cut edges are easily made to present in the field and the placing of the other sutures thus facilitated. The same general plan is used in the removal of polypi.

Abscesses. For many years I have employed circumferential infiltration in the opening of abscesses in the region of the anus as well as elsewhere. As a rule, infected tissues should not be injected, mainly on account of disseminating the infection, but also because the infiltration is somewhat painful. I have, however, in a large number of cases directly infiltrated the skin over "ripe" abscesses before incision along the line of infiltration and have never noted any untoward results. The infiltration must be made in such a manner as to avoid pressure upon the abscess proper. Incision is best made by transfixion of the abscess wall.

A fistula of any degree compatible with surgical treatment may be blocked by the infiltration method. In this region there are no structures which can be injured by careful blocking **outside** of the affected area. The perfect repose and ischemia furnish a marked contrast to the undulating, congested field which presents when general anesthesia is used. Under perfect blocking the divulsion of the sphincter and dissection can be carried out with a facility and careful technic almost unknown under general anesthesia. Wide excision of the fistulous tract has been practised in all cases with the most excellent of results.

In this region quinin and urea hydrochlorid (one-sixth of one per cent.) may be used with impunity for the purpose of reducing postoperative discomfort. It is our practise to make multiple punctures in the skin about the rectum to relieve the postoperative edema, and to give liberal doses of opiates if the patient is at all uncomfortable. Bowel movements are postponed for three or four days, if possible, and the early movements are preceded by enemata of warm oil introduced through a rubber catheter. In most instances the patients are allowed to leave the bed within a day or two of operation if they so desire.

REFERENCES

1. Farr, R. E.: Narco-Local Anesthesia, St. Paul Med. Jour., May, 1916.

2. Farr, R. E.: Vaginal and Vagino-Pelvic Operations Under Local Anesthesia. Interstate Med. Jour., 1917, xxiv, No. 7.

3. Farr, R. E.: The Pneumatic Injector: A Substitute for Local Anesthesia Syringes. Amer. Jour. Surg., July, 1917.

DISCUSSION

DR. EARL R. HARE, Minneapolis: For a number of years I have been exceedingly interested in watching the very illuminating work that Dr. Farr has been doing under local anesthesia, and I have moved up from a position of skepticism to a high plane of admiration of the work which he has done. The work which he has illustrated is only a type of work that is being done every day under local anesthesia with perfect satisfaction to the patient in the first place, and to the surgeon in the second place.

In discussing this paper I wish to call attention first, to some points in the anatomy of the rectum. It is divided into two parts, a pelvic portion, and an anal

portion. The first lies between the third sacral vertebra and internal sphincter muscle. This part is distensible and is not very sensitive. Then we have the anal portion which lies bewteen the two sphincter muscles, approximately an inch in length. This portion is not easily distensible, but is exceedingly sensitive. It makes it difficult on account of the marked sensitiveness of the lower portion of the rectum to anesthetize it, according to some practitioners, but as a matter of fact it is exceedingly easy. If you remember that the blood supply is very rich in the perineum coming from the hemorrhoidal vessels, and being returned by the hemorrhoidal veins which completely surround the tube, and the veins being very large, and if you will remember that a toxic dose of novocain or local anesthetic can be easily introduced into the vein and the patient collapse as a result of it, and if you remember further that the nerve supply comes from the sacral plexus and coccygeal plexus, principally from the second, third and fourth sacral nerves, and from the internal pudic, the lower portion of the sympathetic plexus sending down branches to the internal sphincter, you will see that by the careful application of novocain in the right way, it is entirely possible to completely anesthetize this area without danger to the patient.

Patients have died as a result of the injection of novocain into the region of the rectum. Perhaps I should not say they have died as a result of the injection, but following the injection of novocain into the area of the rectum.

If you will remember the point brought out in Dr. Farr's paper, namely, to exercise great care in moving the needle point in order to avoid danger to the patient by injecting the novocain directly into the vein, you will obviate much trouble which you would otherwise cause the patient. In the second place, if you will remember the position of the internal pudic nerve and go down under the obturator fascia with the end of the needle and anesthetize by imbibition the internal pudic nerve and run the needle parallel with the tube of the rectum three or four inches as described in the paper, using three or four ounces of novocain or apothesin solution, you will be able to get complete anesthetization of this area, and you can do what you like from a surgical standpoint within a distance of five or six inches of the lower anal sphincter. You can remove hemorrhoids; you can dissect out fistulae; you can remove polypi. You can dissect growths; you can remove foreign bodies. I do not care what you want to do, you can do it with impunity and without pain to the patient and with all the comfort that accrues from a local anesthetic after an operation is over.

The method of anesthetization has been very clearly given. A wheal is made, then a subdermal injection, then a tube paralleling the rectum, and then the injection is made underneath the fascia in order to anesthetize the internal pudic nerve.

Are there any dangers to this method? Yes, there are. If you do not keep the needle maneuvering all the time there is great danger. Is there any danger from the use of quinin and urea? Yes, there is. Recently a death was reported following infection from a sloughing pile which was injected by quinin and urea. The quinin and urea used was strong enough to cause sloughing of the pile and infection directly into the area followed, and then a general spreading of the infection which was not walled off by the pelvic fascia as it ordinarily is. Nature has so arranged the pelvic fascia as to prevent infection from ascending along the course of the rectum. Once in a while infection gets by. In this particular case it drained up into the lymph system along the course of the sacral plexus, and the patient died as the result of infection introduced through the base of a sloughing pile. So there are some dangers.

I recall to mind one case where novocain was used some five or six years ago in the Minneapolis Hospital, and the patient died in less than five minutes after the injection of the novocain. I do not say death was the result of the injection of the novocain, but it was subsequent to the injection of the novocain. Probably the novocain was introduced directly into a hemorrhoidal vein and the patient died from toxicity occasioned by a large dose of the drug introduced in that way.

I want to say a word or two in reference to the divulsion of the sphincter. Let us be exceedingly careful how we divulse the sphincter muscle. The fibers of the external sphincter muscle are strong, but easily torn. I do not agree with those who advocate divulsion of the sphincter muscle with a mechanical contrivance. When I divulse the sphincter with my finger I can usually tell before the muscle tears. We should not tear a single fiber of the internal or external sphincter muscle if it can be avoided. We should appreciate the fact that these muscles are put there for a definite purpose. The internal sphincter is involuntary, while the external sphincter is voluntary. If you destroy the internal sphincter, your involuntary control is gone. If you destroy the external sphincter, voluntary control is gone, and it is exceedingly embarrassing to lose control of the one or two muscles which are placed there for your protection. So I think it is out of place for a surgeon in divulsing the sphincter to destroy the muscle fibers.

A word or two more and I am through. Multiple paranal punctures are valuable in the class of cases under consideration. They add to the aftercomfort of the patient; they reduce the amount of congestion caused by the manipulations of the operator, and they prevent much swelling which makes the average patient who is operated on for hemorrhoids think that he is absolutely ruined for the next five or six days. Multiple punctures prevent that, and the patient goes through convalescence without the discomfort or the pain which is caused by constant contraction of the sphincter muscle shutting down on the outraged area, and if you will remember to make these multiple punctures and let them bleed, you will find that this will add greatly to the patient's comfort and he will bless you because of it.

DR FARR (closing): The first point which I wish to consider relates to collapse. I have had a number of patients faint, both at the hospital and the office. I have occasionally seen the friends of a patient fall when discussing the patient's condition. Patients frequently become pale and weak in anticipating the opening of an abscess or something of the kind. In

about two thousand operations which I have performed under local anaesthesia I have never had a single case show these symptoms. I recall one case in which I injected novocain directly into an artery. The patient's pupils became dilated, he vomited and had a feeling of constriction about the heart. This patient undoubtedly had toxic symptoms. Most cases of collapse are,, I am certain, due to psychic disturbances, and have nothing to do with the toxicity of novocain. The literature shows but one case of death from novocain. I have no doubt but that there may be others, and I believe that every suspicious case should be reported.

To show that the toxicity of novocain is very low I will say I have given as high as forty-two grains at a dose, and that I every day give as high as thirty grains. The maximum dose can not be measured in grains, but should be measured in strength of solution, and if properly given the toxicity is very low.

I never spend much time in discussing the subject of local anaesthesia with patients before operation. It is impossible for them to understand or be convinced. I simply tell them to leave the question of anesthesia to me, and then try to prove that the "proof of the pudding is in the eating."

The question of infection from a sloughing pile is hardly germane. I know of two or three cases in which the patients have died following general anesthesia for an operation for hemorrhoids. Quininе-urea will not cause sloughing if it is in a weak solution and not injected directly into the skin.

In answer to the question concerning the burning off of a pile, it makes no difference in my opinion whether the pile is first cut off and then cauterized or not. I do believe, however, that the soldering iron should not be too hot. If the pile is burned off slowly it is less apt to bleed. A white heat will sometimes act much like a scalpel and hemorrhage may follow.

DERANGEMENTS OF THE SEMILUNAR CARTILAGES OF THE KNEE JOINT.*

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The semilunar cartilages are the most common cause of mechanical derangement of the knee joint, the internal being the chief offender.

The knee is a large hinge joint, and, placed as the two semilunar cartilages are between the long bones making up the joint, they are especially liable to injury. The internal meniscus is crescent-shaped, whereas the external makes nearly a complete circle. They are both wedge-shaped, their bases being toward the periphery of the joint. They aid in deepening the depressions for the articular surfaces of the condyles to rest on the tibia. The external cartilage has no very strong attachment to the capsule of the joint and is thus permitted a certain amount of motion, which allows it to glide out of harm's way when threatened with being caught between the joint surfaces. The internal meniscus, on the other hand, has, along the peripheral border, a firm attachment to the capsule. Its close association with the anterior and inner part of the capsule, into which a few fibers of the quadriceps are inserted, undoubtedly is occasionally responsible for the disturbance of the normal contour of the cartilage, and, on extension of the knee, the nipping of the cartilage between the joint surfaces.

Symptoms and pathology.

The symptoms produced by mechanical derangements of these menisci are explainable only by the pathologic condition present, and in a discussion of the subject they should be considered together.

It is rather strange that derangement of the semilunar cartilages has received so little attention in America. This has been commented on by various English authorities, to whom we must turn for most of our information on the subject. Unquestionably, mechanical derangement of the cartilages is less frequent in the United States than in England. The English youths and young men play "soccer" football, which next to coal mining, is the most common source of the trouble. In America, soccer is almost unknown, and our football, similar to the English Rugby, is not played so universally. Moreover, the character of play is not so apt to cause injury to the knees as is soccer. American surgeons are greatly indebted to Sir Robert Jones for his articles which have occasionally appeared in our journals. He has done more than anyone else to awaken our interest in this subject. Sir Rutherford Morison, and Martin, both at Newcastle-on-Tyne, have reported large series of cases. In that region, the miners work in seams which are so low that they are forced to keep their knees flexed, and naturally, in order to maintain their equilibrium, they evert the feet,—the position most favorable for injury to the internal semilunars. There is little doubt that we in America are not recognizing the condition as we should, and that many persons are going about suffering from this curable surgical condition.

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The position favorable for the infliction of injury to the internal semilunar cartilage is partial flexion of the knee, and eversion and outward rotation of the foot, so as to rotate the head of the tibia outward on the femur. With the knee in this position, the internal semilunar cartilage is placed deeper in the joint than it is in any other position. If the rotating force is applied above instead of below the knee, with the knee partially flexed, but with the foot in the normal position, the femur will rotate inward on the tibia, and the same condition in the knee will be present; that is, the internal cartilage will be nearer the inner part of the joint. If, in this position, the knee is extended, the smooth surface of the inner condyle of the femur may roll down and catch the inner semilunar cartilage. This movement, brought about by the action of the powerful quadriceps while the individual is working or participating in some game, is usually quick and sharp, and cannot be checked in time to prevent damage to the cartilage. The cartilage must either slip away, be torn, or crushed. The external cartilage, if it happens to be caught, as I have mentioned, has considerable mobility and may escape. The internal cartilage is closely bound to the capsule and is not permitted this latitude of movement. The type of injury sustained by the meniscus depends on the point at which the crushing force is inflicted on it. If only the anterior end of the cartilage is caught it may be torn loose, and this portion may hang as a more or less pedunculated loose body. The chief symptom produced by such a cartilage is recurrent locking. Owing to the fibrous character of the cartilage, it must be extremely rarely that a complete transverse tear is produced and a free body formed.

If the condyle crushes the cartilage further back, the damage to the cartilage may consist of a longitudinal tear in the middle three-fifths, leaving the anterior and posterior fifths intact. The surgeon in operating in such cases, when opening, as he usually does, over the anterior inner portion of the joint, may be deceived when he sees the anterior end apparently intact. The middle three-fifths of the meniscus in this type of case usually lies in the middle of the joint, that is, the torn portion lies to the outer side of the internal condyle in the intercondylar notch. This has been referred to by Morison* as a "bucket handle" fracture. The outstanding and typical symptom of such pathologic findings is, in not a few instances, a persistent lack of complete extension. In this type the typical attacks of recurrent locking may also occur.

When the patient is seen immediately after the accident, there is pain and disability, and effusion soon appears. The locking may still be present, and an attempt at reduction should be made at once. Place the patient on a hard bed, a table, or on the floor, flex the knee fully with the muscles relaxed, rotate the tibia inward, and then forcibly and rapidly extend the limb, the surgeon pressing on the knee. Usually it can be reduced in this manner, but if the attempt is not successful, it may mean that the middle three-fifths of the cartilage lies caught in the intercondylar notch. Full flexion of the knee preceding the extension may release such a torn bucket-handle cartilage, but if this fails there is nothing to do but to open the joint and remove the cartilage. If reduction is successful, the knee should be kept in a cast or splint for at least four weeks to permit the cartilage to grow in place. Although the surgeon may apparently obtain full extension, if the patient insists that "things do not seem right in the joint," it may mean that reduction is not complete. It is wise carefully to consider such a statement by the patient, and not to be too confident that reduction is complete.

More often the patients come to us after many lockings, generally each attack followed by pain and swelling. Some weeks or months may intervene between the accident and the second locking. The patient usually volunteers the information that walking on rough ground or stubbing the toe with the knee partially bent and the foot turned outward, is the position in which the locking or catching occurs. The story may not be clearly told, and it is only by careful inquiry that a diagnosis can be made. The patient may be able to release the cartilage by certain motions, the disability may be of only a few minutes' duration, and the soreness following negligible. Many persons go through life with a loose cartilage producing slight

*In a previous article by the author this type of fracture was described. He was not aware at the time of the very descriptive nomenclature applied to it by Sir Rutherford Morison.

symptoms without seeking surgical aid. If the locking is more complete and painful, there is no sudden feeling of release; marked swelling and disability ensue, and the patient is laid up for some days. The pain and tenderness, as a rule, are located over the anterior extremity of the cartilage, although many patients complain of the pain being diffuse and mostly under the patella. If the pain is located on the outer side of the joint, it usually means that the external cartilage is involved. Sir Robert Jones calls attention to the fact that he has rarely known pain from the internal cartilage to be referred to the outer side. Sir Arbuthnot Lane and Sir Robert Jones both call attention to the occasional development of tuberculosis of the knee in patients who have previously presented symptoms of a loose semilunar cartilage. They accordingly urge that the operation shall not be deferred in well marked cases. Most certainly, in a few patients suffering with tuberculosis of the knee, a very clear history, extending over many years, of typical locking of the joint may be elicited. The observation is interesting because intermittent chronic irritation with subsequent inflammation is generally recognized as an etiologic factor in the production of cancer, but not of tuberculosis.

Differential diagnosis.

The roentgenogram is an aid in the diagnosis only in so far as it is of negative value. Rarely does a semilunar cartilage cast a shadow on the plate and then only if it is doubled up and greatly thickened, owing to the repeated traumas inflicted on it. Every knee presenting symptoms of mechanical derangement should be rayed, as this is the only way to differentiate in some cases between a loose osteocartilaginous body and a loose semilunar body. The loose osteocartilaginous body, due to osteochondritis dissecans, or osteochondromatosis, casts a definite shadow.

In the case of a loose osteocartilaginous body, there is often, but not necessarily, a history of direct trauma followed by pain. The dessication of the body occurs later, and it may be only after some weeks that locking is present, whereas in the case of a loose semilunar cartilage the injury is indirect, followed by pain with immediate locking. As a rule the effusion, and in fact all the symptoms are less marked in the cases of loose bodies than in the semilunar cases.

A certain group of patients complain of a sort of slipping, not really a catching or locking. No effusion or disability follows, and the pain is not severe. Such cases are not surgical, and it is possible the symptoms are produced by a little fat synovial tag being nipped occasionally between the joint surfaces.

It is always well to question the patient as to whether or not he ever feels anything "come out." By that term he often means a protuberance to be felt on the inner side of the knee over the anterior extremity of the internal semilunar cartilage. This may be present when the knee is "out of joint." If what the patient feels always presents itself in the same place, at the anterior inner part of the knee, it is probably a semilunar cartilage, but if it presents itself at one time above the patella in the suprapatellar pouch, and at another on the inner or outer side, it is probably a loose osteocartilaginous body.

In another group of cases there is a complaint of semi-catching or slipping suggestive of a loose cartilage, but usually the patient is middle aged and there is no definite history of trauma. One must be on guard not to mistake the onset of a hypertrophic arthritis for a mechanical derangement. The points that should be fulfilled before a diagnosis of deranged internal semilunar cartilage is made are: (1) a history of injury to the knee (not necessarily direct); (2) pain, disability and locking of the joint, followed by effusion; and (3) a negative radiographic examination. Once the diagnosis of damaged semilunar cartilage is made the treatment must be surgical, either nonoperative or operative. If the patient is seen at the time of the accident, the treatment should be immediate reduction as herein outlined, followed by fixation in a cast or splint for four weeks. Only occasionally will it be necessary to open the joint in a recent case. A safe general rule to follow is that a knee having had but one derangement should not be opened. The technic for the removal of the internal semilunar cartilage which has been found satisfactory in the Orthopedic Section of the Mayo Clinic is, briefly, as follows:

Treatment.

The day previous to the operation the knee is carefully shaved and scrubbed with soap and water. This is followed by an alcohol rub, and an alcohol dressing is applied and left on until time for the final preparation.

The anesthetized patient is placed on the table so that the knees come just over the split which allows the foot piece to drop. The knee is prepared by the benzine and iodine method, care being taken that the scrubbing with benzine is done with the knee extended and flexed. In this manner the folds in the skin, both anterior and posterior, will be thoroughly cleaned. The leg is painted with iodine from the ankle to well up on the thigh. After the draping with sterile sheets and towels is completed, a tourniquet is applied to the thigh. The foot of the table is then dropped and the patient placed in slight Trendelenburg position. The incision is started from opposite the middle of the patella to the inner side, coursing down a little in front of the condylar line that can be plainly felt beneath the finger. The skin incision should be carried well down over the joint line, curving it a little posteriorly, so that the shape resembles somewhat a hockey stick. The knife and tissue forceps used are now discarded, and clean ones are used for the deeper work. Skin towels are carefully placed, so that sutures, etc., may not come in contact with the skin. The fascia and fat are incised and the joint opened. Blunt retractors may be placed within the joint to permit a view of the cartilage. If it is torn at the anterior end, the anterior two-thirds of the meniscus should be removed. It is seldom necessary to remove more than the anterior four-fifths of the cartilage; three-fifths is usually sufficient. Care should be taken not to divide the internal lateral ligament. In the removal of the cartilage from its attachment to the capsule in the region of the internal lateral ligament, a little rim of cartilage may be left on the capsule, and thus any injury to the fibers of the ligament will be avoided.

After the removal of the meniscus, the wound is closed layer by layer with plain catgut, using interrupted sutures. The skin is closed with silkworm and horsehair. A fairly heavy cotton dressing is put on firmly, and the tourniquet removed. A plaster of Paris cast is applied, and worn for seven days. Gentle motion is permitted as soon as the cast is off. All the stitches are out by the twelfth day, and walking is permitted as soon as the patient wishes. If effusion ensues, an elastic bandage is worn for a time.

Discussion of cases.

As a basis for this study the records of 98 consecutive patients operated on in the Mayo Clinic have been examined. There were 18 patients between the ages of 11 and 20 years; 42 between 21 and 30; 20 between 31 and 40; 15 between 41 and 50; and 3 between 51 and 60. Sixty were under 30 years of age. Seventy-seven were males, and 21 were females. The right knee was affected in 44 instances, and the left in 54. The internal semilunar was removed in 94, and the external in 4 instances.

In the selected cases presenting typical symptoms in which the diagnosis has been carefully worked up, the surgeon will usually find a torn cartilage either at the anterior end or in the middle three-fifths. It has been my usual custom to have placed on the surgical record whether or not the pathologic condition found seemed sufficient to account for the patient's symptoms. In a number of instances (18), although there was a more or less clear-cut history of locking with the typical train of symptoms, the cartilage, at operation, appeared normal except for a little too much mobility involving the capsule in that area. Nevertheless the cartilage was removed.

This group of 18 cases is of interest, containing as it does evidently the poor selections for operation. It is stated by Mr. Fagge that there must be pathologic evidence consisting of a tear (or fracture*) of the meniscus, before it is removed. In 4 of these 18 cases the results were excellent, and in 4 the results were generally satisfactory in that practically all the symptoms were relieved. It is undoubtedly true that so-called loose cartilages causing symptoms are rare, compared to the torn cartilage, but undoubtedly they occasionally do exist. The

*While the word fractured cartilage is used commonly, the term "ripped" or "torn" is in reality more descriptive of the pathologic condition present. The semilunar cartilages are fibro-cartilaginous in structure and rarely fracture but do commonly rip or tear in their longitudinal axis.

pathologie condition present in patients of this group who have responded favorably to the operation is, I believe, a laxity of the capsule which, under certain conditions, permits of a eatching of the cartilage between the joint surfaees. The pain may be extreme until the cartilage is released. In 3 of the group of 18 patients the results are unknown. In 7 the results were unsatisfactory, and it must be acknowledged that the diagnosis was wrong, or our seareh for the pathologic condition at the time of the operation was insuffieient. None of the patients are worse.

In 9 instanees, the semilunar was removed in persons operated on for free osteocartilaginous bodies. This was done in our earlier cases and in some, at least, was probably not necessary. The results however, were all excellent.

In 13 instances, the histories were insuffieient to permit of any classification as to the type of injury to the cartilage, but the results were satisfactory in 9 and unsatisfactory in 4, showing that the paucity in the notes, at least in some cases, was probably due to paucity in the pathologie condition.

In 58 cases of the series, a torn and misplaced cartilage was found. The notes in some of these did not show the exact loeation of the tear, but in 21 it was definitely stated that the middle three-fifths was torn longitudinally, separated from the capsule, and lying in the intereondylar notch. This is the bucket-handle type of fracture so aptly named by Sir Rutherford Morison. The results in this group were exeellent. It is more than probable that some of our early cases in which the surgical notes showed merely misplaced or loose cartilage, were in reality torn cartilages.

I have limited my discussion to the internal semilunar eartilage, but the same technie applies to the external cartilage except that the incision must be made, naturally, on the outer side, and once the joint is entered and the cartilage found to be at fault, its removal is not difficult, as the attaehments to the capsule are not so firm as those found on the inner side. It is probable that the internal semilunar is damaged more than twenty-five times as often as the external. In our series four external cartilages were removed, but the symptoms were relieved in three only.

Conclusions.

1. A semilunar eartilage should not be molested unless there has been more than one attack of locking.

2. The term loose cartilage is not correct. A ripped or torn internal semilunar will be found in the majority of cases. There is no uniform type of tear, but there are two common types, namely, the middle three-fifths, torn longitudinally and placed in the intercondylar noteh, the "bucket-handle" tear, and the anterior extremity torn longitudinally and hanging as a loosely attached body readily nipped between the joint surfaces.

3. The symptoms which should be present are: history of trauma (usually indirect), pain, disability, locking of the joint, effusion, and a negative radiogram.

4. In atypical cases operation should be done only after very careful consideration.

REFERENCES.

1. Fagge, C. H.: Injuries of the semilunar cartilage. Clinical Jour., Lond., 1915, xliv, 81-87. Also Book Review, Brit. Jour. Surg., 1918, v. 697-698.

2. Henderson, M. S.: Mechanical derangement of the knee-joint. Ann. Surg., 1918, lxvii, 738-746.

3. Jones, R.: Internal derangements of the knee. Lancet, Lond., 1914 ii, 297-300.

4. Jones, R.: Notes on derangements of the knee, based upon a personal experience of over five hundred operations. Ann. Surg., 1909, l, 969-1001.

5. Lane, W. A.: A clinical lecture on some of the common injuries of the knee-joint and their consequences. Brit. Med. Jour., 1911, i 537-539.

6. Martin, A. M.: Injuries to the semilunar cartilages: A personal experience of 449 cases of operation. Proc. Roy. Soc. Med., Lond., 1913, vi, pt. 3, Surg. Sect., 23-30.

7. Morison, R.: Injuries to the semilunar cartilages of the knee-joint. Clinical Jour., Lond., 1913, xlii, 1-7. Also, Lancet, Lond., 1909, i, 604-607.

DISCUSSION

DR. R. E. FARR, Minneapolis: I have enjoyed Dr. Henderson's paper very much. It seems to me that this is a very important subject. Cases of derangement of semilunar cartilages are common and very troublesome. I want to speak of two points in particular.

The first concerns anesthesia. The knee joint can so easily be handled under local anesthesia, without loss of time, that it seems to me that novocain should be used more frequently here. The line of infiltration should be along the proposed line of incision, the needle carried

directly into the joint, blowing the joint up with novocain. By the time the incision is made and towels pinned in place the joint will be anesthetic.

The only thing that causes pain in the removal of the semi-lunar cartilages is the traction on the cartilage when it is being divided on the posterior end. One may run the needle down to this point and make a direct infiltration, provided the patient makes complaint.

Where the joint is to be opened on both sides we have made it a practice to introduce the forceps through the first opening and cutting down upon it in order to facilitate the making of the incision.

Every case I have operated on has been correctly diagnosed so that there would seem to be little difficulty along this line.

The other point about which I feel very keenly just now concerns the matter of infection, and we should be very conservative in recommending surgical treatment in these cases. If the patient can get along without the operation we should advise him to do so. I have a case in the hospital now which has been there four months with streptococcic infection of the knee—a healthy farmer who was operated upon by the Lane technic. The sutures were all tied with instruments and yet the patient developed streptococcic infection. In this case the infection came from the catgut, as cultures of the catgut showed later. As Dr. Henderson says, infection is no more apt to occur in the knee joint than elsewhere in the body, still, when infection does take place in this joint, it is nothing less than a calamity.

DR. HENDERSON (closing): I have nothing in particular to add to what I have already said except again to emphasize the importance of infection. At the same time, the danger of infection of the knee has been somewhat overrated. There are numerous instances of bullets having entered the knee, yet the knee has taken care of the infection. If the same careful aseptic technic is employed in dealing with the knee joint as that in other surgical work, there will be very few cases of infection. I am not underestimating the importance of asepsis, but there is no need of being unnecessarily frightened or worried over it.

In regard to the case mentioned by Dr. Moore, it is hard to definitely decide what the condition is. It may be osteo-chondritis dessicans in which a piece of the somewhat brittle cartilaginous surface has been broken off. Sometimes in such a case a diagnosis of a damaged semilunar cartilage is made, whereas in reality the trouble is due to a loose free osteocartilaginous body.

I cannot say that we have always correctly diagnosed these cases. There is some difficulty attending the diagnosis, but I believe with increased experience we can make a better showing in our next series. The symptoms are not exactly typical in all cases. The X-Ray is a great aid in determining just what type of incision we should make particularly if we are dealing with a loose osteocartilaginous body. A negative X-Ray leaves us free to assume that we are dealing only with the semilunar cartilage and the ordinary inner or outer incisions may be used.

HAY FEVER AND ASTHMA*

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This paper seeks to present some general considerations of the subject in the light of our present knowledge. This knowledge has come from a vast amount of investigation by a small army of workers during the past few years.

Some idea of the extent of the literature may be inferred from the fact that in the last Index-Medicus in the Laryngoscope there were listed for the previous year fifty-seven papers dealing with Hay-Fever and Asthma.

The characteristic paroxysmal dyspnoea of bronchial asthma is a symptom dependent upon contraction of the lumen of the smaller bronchioles.

This may be due to irritation of the vagus, directly or indirectly . The relief which is secured during an asthmatic attack from the effects of atropin is due to the inhibitive effect of the drug on the vagus., producing a relaxation of the spasm of the muscular walls of the bronchioles, and incidentally the drying effect on secretions which the atropin produces.

The so-called cardiac asthma is a symptom due to a different cause than that of bronchial asthma proper. The cardiac asthmatic symptoms are the result of a passive pulmonary congestion, with more or less oedema.

The most important contribution to our knowledge of the cause of asthma which has been made during recent years has been the application of our comparatively recent knowledge of the phenomena of anaphylaxis to the problem of the cause and treatment.

The phenomena of anaphylaxis are varying, according as the circulatory, respiratory, skin or nervous symptoms predominate. The respiratory symptoms capable of being produced experimentally are identical with those of bronchial asthma. There is a stenosis of the bronchioles, due to tetanic contraction of the muscle fibres, with swelling of the mucosa.

This effect is independent of external influences, such as vagus irritation, being reproduced in animals whose vagi have been severed.

*Read before the Sioux Valley Medical Association, Sioux Falls, July 24, 1918.

Anaphylactic reactions occur in individuals who have been sensitized to some foreign protein, belonging to one of the following principal classes:

1—Food products, animal or vegetable. In this class are to be found a large number of substances, eating which provokes an anaphylactic reaction in sensitized persons: Cheese, fish, corn, veal, wheat, eggs, strawberries, peaches, etc.

2—Body emanations, such as horse dandruff and cat hairs, often found to be provocative of respiratory anaphylaxis.

3—Plant emanations, chiefly pollens. All are familiar with the true hay-fever reactions due to pollen irritations, such as the pollens from rag weed, timothy, daisies, etc.

4—Bacterial products, particularly those absorbed from foci of infection.

According to Vaughn, proteins are capable of being split into components, one of which is toxic, and the other non-toxic. When a foreign protein is injected into the tissues, or otherwise gains rapid entrance, as for example through a focal infection, a digestive process takes place, spoken of as parenteral digestion to distinguish it from the normal digestion which occurs within the intestine. This parenteral digestion splits the foreign protein into its components. The toxic components after a certain period of incubation, sensitize the organism so that further absorption of the original foreign protein precipitates anaphylaxis.

The sensitization to these proteins may be detected readily by means of a dermo-reaction, as is done in making the v.Pirquet test. Extensive work along these lines, in identifying the different proteins which may be involved, has been done by such men as Goodale and Turnbull of Boston, and Oppenheimer and Gottlieb of New York.

Food substances, as well as other sensitizing proteins, are as a rule specific in their reactions, each responding only to its own kind in the dermo-reaction. However, closely allied substances may give a group reaction. This is especially true of the pollens which Scheppergrell of New Orleans has classified into four groups.

The technique of carrying out the skin reaction is simple. The protein in the form of an extract or of a killed culture of the bacteria suspected is rubbed into a skin abrasion as in making a v–Pirquet test. In specific reactions within a short time a wheal is noted on the skin, surrounded by a reddened area; the rapidity and violence of the reaction giving a clue to the degree of sensitization.

The foci of infection from which most frequently occurs the absorption of the bacterial proteins which produce sensitization, are the teeth, tonsils, nasal sinuses and gall bladder. The bacteria which have been found to play the most important parts in producing the sensitization which results in the respiratory anaphylaxis of asthma and hay-fever, are the Streptococci-viridans and haemolyticus, together with M. catarrhalis.

The large number of reports of relief from asthmatic symptoms following drainage of infected foci gives clinical evidence of the great importance of this side of the asthma problem.

The importance of the nasal accessory sinuses as foci in which chronic infections may lurk unobserved, should always be borne in mind and a thorough search made for these foci in every case of asthmatic trouble.

Beside the infectious element in the nose we also have to bear in mind the factor of reflex irritation of the vagus as the result of pressure and other irritation of the nasal nerve supply. Reflex paths are traceable from the nasal nerves to the spheno-palatine ganglion, thence through the Vidian to the carotid plexus of the sympathetic, and from communicating sympathetic fibres to the vagus.

As one of the sources of bronchial spasm this factor of vagus irritation should always be considered.

Ewbank of Australia is of the opinion that the exciting cause of asthma is to be found in the nose, and emphasizes the importance oi "asthmatic spots" within the nose, irritation of which will produce bronchial spasm.

It would seem probable that the relief which is so often noted after a thorough intranasal operation is due in part to the relief of vagus irritation as well as to the clearing up of infection which may have an anaphylactic influence.

Hay-fever is to be regarded as a type of asthma. The same general principles which are concerned in our understanding of asthma

of the bronchial type apply to the type known as hay-fever. In its true form this condition depends upon the specific protein sensitization of pollen, which may be worked out specifically by means of the dermo reaction.

However, there are other forms of the malady in which clinically the conditions are much the same, but where other substances than pollens are responsible for the anaphylaxis.

Inasmuch as in the great majority of cases we have to do with a pollen irritation, the search for the specific sensitization should begin with a study of the pollen reactions.

Hay-fever never occurs in a patient having a normal nose and normal accessory sinuses.

In addition to the factor of vagus irritation, and the possible absorption of bacterial proteins from foci of infection in the accessory sinuses, there is a condition of the mucosa favorable to the rapid absorption of pollen granules or other protein substances which makes it possible for parenteral digestion and sensitization to occur.

The skepticism which is so prevalent regarding the possibility of any substantial relief for hay-fever and asthma is largely the outcome of attempts to secure relief by some single specific, whether it be sprays, inhalations, nasal operations, pollen vaccines or what not.

There is no royal road to results in treating these cases. Each must be carefully studied, and treatment based upon a knowledge of the pathology which is present.

If it is permissable to epitomize the treatment of these conditions, the following may be presented as representing the present status of our knowledge of the most rational methods.

In bronchial asthma, having tided the patient over an attack with such remedies as have been found suitable, for example, morphin, good sized doses of atropin, inhalations of nitrites, stramonium, etc., attention should be given to working out the possible pathological causes.

A thorough search for foci of infection should be instituted and given proper surgical attention Teeth, tonsils and gall bladder infections may be less liable to escape discovery than infections of the nasal sinuses. Too often a nasal examination is made so very superficially that unless there is nearly complete obstruction, polyps, or pus in large amounts, the nose as a source of infection is eliminated.

A carefully taken history may give a clue to some food which is the source of trouble in setting up anaphylaxis. Working on suspected foods one may readily find a specific skin reaction, while again it may be necessary to go through the whole dietary.

If a specific case has been thus proven against an article of diet, it may be eliminated from the foods to be eaten. Where this is not practicable, as for example a sensitization to wheat protein, a specific immunity to this protein may be built up by the injection of minute doses of the protein, gradually increased.

In a like manner the use of appropriate bacterins may be used to complete the work of surgery in establishing drainage.

The avoidance of animal emanations and pollen laden air is a very simple way out of the difficulty when these agencies have been proven to be important factors; but it is not often practicable to do so. The person with limited means can not leave his work and hie to a pollen free district every year.

Here, especially is the value of establishing specific immunity to the foreign protein involved.

In a large proportion of cases, if the proper surgical work, especially on the nasal accessory sinuses, has been done, and the pollen sensitization worked out, practical freedom from hay-fever symptoms may be secured for the season by immunization, which should precede the beginning of the season long enough to have the specific resistance well established by that time.

The immunity so established does not usually last more than a few months, and should be re-established the next year, when a relatively short course of injections of the pollen protein is required.

Some value may be attached to the regulation of the secretions. Kyle showed that there was a tendency toward acidity of the salivary secretions in hay-fever, and that attacks were greatly ameliorated by large doses of alkalies.

The calcium salts are also of value, their action probably being similar to the effect produced by them in treating urticaria, the condition being analagous to, if not in fact a skin manifestation of anaphylaxis.

TYPHOID FEVER

(An Extract from the Biennial Report 1916-17).

MINNESOTA STATE BOARD OF HEALTH
Division of Preventable Diseases
A. J. CHESLEY, M. D., Director.

In no disease is the need for prompt reporting of all recognized and suspected cases more necessary for control and prevention than typhoid fever, usually 14 days intervening between infection and first symptoms, 7 to 14 days more before diagnosis is established. Rarely is any inquiry made earlier for the purpose of obtaining clues to the source of infection. Death certificates have been found to be the only form of report made for a number of cases every year. Usually these fatal cases were recognized as typhoid and under the treatment of physicians for several weeks, often they have been in hospitals. Investigations of hospital records in previous years, and especially during this biennium, have brought to light the tendency of physicians to depend upon the hospital authorities to report, while the hospital authorities assume no responsibility, considering that it is the duty of the attending physician to report. As a matter of fact, both parties should report. There will be no chance for duplication of records, for every case is carefully studied and followed up by the Division, by correspondence, if one of the epidemiologists does not personally investigate. Reporting has improved, especially since 1912, when the routine follow-up work of the Division began. Nevertheless, the fatality rates following are much greater than the actual fatality of typhoid.

Reported	Cases	Deaths	Fatality Rate
1910	1985	688	34.0%
1911	938	294	31.3%
1912	783	233	29.7%
1913	1304	235	18.0%
1914	1784	225	12.6%
1915	1028	156	15.2%
1916	916	127	13.8%
1917	734	99	13.5%

In typhoid fever, diarrhea and dysentery, co-operative work between the Division of Sanitation and Division of Preventable Diseases is as follows:

DUTIES OF I.—Division of Preventable Diseases.	(a)	To find infected persons.
	(b)	To trace active routes of spread. All official and unofficial reports of cases are checked in the laboratory through Widal tests and search for typhoid bacilli in blood and bowel and bladder discharges when desired, and in the field the routes of spread are personally investigated by the epidemiologist.
	(c)	To assist local authorities in control of infected persons and routes of spread.
	(d)	To prepare and distribute free prophylactic typhoid vaccine.
DUTIES OF II.—Division of Sanitation	(a)	To supervise public water supplies and sewage disposal.
	(b)	To take emergency action when epidemiological study indicates pollution of water.

The Widal test and blood cultures are of importance in diagnosis and it is essential that the attending physician should make careful inquiry and give as full epidemiological data as possible when he first suspects typhoid fever. His information which may include data seemingly of no importance when considered in connection with the local situation alone, may be of greatest importance and utility when reviewed by the Division of Preventable Diseases, which receives all reports of typhoid fever in Minnesota and has many other sources of information relating to conditions likely to be concerned in the spread of this disease in Minnesota, or in its prevalence elsewhere. Often widely separated cases have been traced to a common source through the study of epidemiological case reports and other data in the Division files, but not available elsewhere.

A study of personally collected epidemiologists' data and physicians' data, secured early and checked for reliability, indicate that more than two-thirds of the typhoid cases in Minnesota are infected by direct contact with cases or "carriers," or by indirect contact through food, milk or flies, while water is in route of infection in less than one-third of the cases.

Whatever the route, the only source of typhoid infection is the discharge of a person who harbors typhoid germs. Every typhoid patient carries these germs; indeed, every convalescent is a "carrier" for some time after recovery. A few convalescents become chronic "carriers" and the gall bladder is the usual seat of infection. No sure method of ridding

the typhoid "carrier" of germs is known at present.

Typhoid Vaccine Protects by Immunization Against all Routes of Infection: Water, Milk, Fingered Food, Flies, Contact with Cases or "Carriers."

In 1898, before the use of typhoid vaccine, every third man in three Minnesota Regiments, and every fifth soldier encamped within the States, had typhoid fever, which caused over 86 per cent of all deaths in our Army during the Spanish War.

Camp sanitation personally supervised by Army surgeons and enforced by military law, failed to protect soldiers not immunized against typhoid fever. The Special Typhoid Commission of the United States Army, Majors Walter Reed, Victor C. Vaughan and Edward O. Shakespeare, concluded that food infected by fingers and flies was the means of spread, while "infected water was not an important factor in the spread of typhoid fever in the National Encampments in 1898."

In 1916 and 1917 not one case of typhoid developed in the three Minnesota Regiments serving on the Mexican Border. All the officers and men had received 3 doses of typhoid vaccine.

Widal tests were made on blood specimens taken at time of first inoculation of vaccine from every soldier who gave history of typhoid fever or continuous fever. Also from all cooks and food handlers. When Widal reaction was present or a-typical, specimens of bowel and bladder discharges were tested for typhoid and paratyphoid bacilli—and this is done from all cooks as a routine in the Army and Navy. Many "carriers" have been found through these tests, and they have been discharged or detailed to some duty in which the danger of spreading infection would be very slight.

Transients unknowingly may contract typhoid by using polluted water, for example: Between July 18 and August 12, 1914, while Benson city water was subject to sewage pollution, 368 persons registered at hotels, 221 from different places in Minnesota, 147 from 18 States and 4 Canadian Provinces. Between December 20, 1916 and March 1, 1917, 425 persons registered at Warroad hotels, 258 from 69 different places in Minnesota, 66 from 11 States and 3 Canadian Provinces, 101 others gave no address; all used water from a condemned supply subject to pollution.

In years 1913 to 1917, inclusive, 284 typhoid cases reported in Minnesota were infected elsewhere, 244 in other States, 15 in Canada, 20 on Great Lakes boats, 2 on Mississippi River boats and 3 in Europe. These facts emphasize the advisability of immunization of travelers.

In years 1915 to 1917, inclusive, 57 persons in Minnesota were proved to be chronic typhoid "carriers" on examination of discharges taken in following up clues to sources of typhoid infection found through epidemiological investigation. These "carriers" are known to have given rise to 288 cases.

If "carriers" follow directions they should not spread infection. Members of the "carrier's" household should be vaccinated against typhoid. The "carrier" must be scrupulously neat in personal habits, always washing hands thoroughly after visiting toilet and before handling table dishes or food. If no sewer or cesspool exists, the use of a sanitary privy is required. The privy should be scrubbed frequently with special reference to seats, lids, door knobs and such parts as may be soiled from the discharges direct, or by means of "carrier's" hands. Suitable disinfectant must be used in the vault, and the privy must be fly-proof.

"Carriers" are forbidden to engage in an occupation involving the handling of milk, cream, butter or other food or food product that is likely to be eaten without being cooked after handling.

Typhoid vaccine and paratyphoid, and the combined typhoid and paratyphoid "A" and "B," commonly called triple vaccine, is made and issued free of charge to physicians by the Division of Preventable Diseases. The use of these vaccines, either the typhoid vaccine or the triple vaccine (now the only one used in the Army and Navy), should be encouraged by physicians for the protection of the civil population.

The danger through transients, through polluted water, through milk or food handled by unrecognized typhoid "carriers," has been shown, and at this time when travel by train and automobile is universal and the enforce-

ment of sanitary measures vary according to the efficiency of State and local health departments, no one can be sure that danger of infection is not present while traveling. The freedom of the military forces from typhoid fever at the present time unquestionably is due chiefly, and under certain conditions wholly, to the protection afforded the troops by prophylactic vaccination. There should be no hesitancy on the part of civilians to protect themselves, for they must do war work and it is their duty to keep themselves fit for work and to prevent spread of the infection, just as much as it is the duty of the soldier.

Local health officers easily can arrange for inoculation of men and boys and also women and girls who are to do emergency war work on farms or in factories. The State Board of Health will assist in every possible manner, but without the co-operation of physicians and local health officers and the interest of the public, nothing can be done along these lines.

Immunization has been quite general in certain places where typhoid outbreaks occur. For example: at Ely, Dr. O. W. Parker, H. O., assisted by Dr. G. T. Ayres of Shipman Hospital, administered typhoid vaccine to practically every man, woman and child in the city, several thousand in all. While as thorough work cannot be done in some places, owing to local conditions, this example is a most excellent one for health officers throughout the State to follow. Typhoid fever is a filth disease. The means of prevention are well understood and its continuance and spread is unnecessary, therefore, why should an intelligent population suffer losses through sickness and death when all the means for eradicating the disease are at hand, but Health officials cannot protect the public against its will. More extensive use of laboratory tests for diagnosis and prompt reporting of each and every case or suspected case of typhoid fever by physicians and hospital authorities should now be considered a patriotic duty. Health Departments are working under handicap, for many of their trained workers have been called into service. The physicians and trained nurses throughout the State are decreasing in number owing to the demands of war service. Therefore, citizens must assume unusual responsibility, take new interest in the protection of public health, and protect themselves by prophylactic inoculation.

Meanwhile, every clue indicating spread of infection by "carrier" should be followed up. It is more difficult to control the spread of infection by a human "carrier," who may move about as he pleases, often engaging in the handling of dairy or food products, thus causing many cases of typhoid fever, than it is to supervise a polluted water supply. The enforcement of restrictions which may seriously inconvenience individuals in their daily life is necessarily a more difficult problem than making suitable changes in a water supply in controlling its filtration or chlorination and distribution. But if either problem is neglected, the public will be endangered more or less in proportion to the number of persons protected by prophylactic vaccination.

Reciprocal notification as provided for by resolutions passed at the Conference of State and Territorial Health Officers with the Surgeon General, United States Public Health Service, in 1917, should be universal. All local health authorities should co-operate with State Boards of Health by giving as complete information as possible promptly upon the discovery or suspicion that a typhoid patient received his infection outside the State, or has left the State while a convalescent or "carrier" of typhoid organisms.

Minnesota Medicine

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EDITORIAL

DEAN LYON'S NEW PLAN OF CLINICAL TEACHING FOR THE UNIVERSITY OF MINNESOTA MEDICAL SCHOOL

In order to lay before the profession of the state the proposed plan of clinical teaching which it is hoped will be inaugurated this summer in the Medical School, we recently asked Dean E. P. Lyon to present in these columns the most important features of the scheme. This the Dean very kindly consented to do, and we take great pleasure in submitting the plan exactly as it has been drawn up by the Dean. We are sure our readers will agree that the plan is in every respect a most notable advance in medical teaching and is especially fitted to meet the requirements of the clinical facilities in the Twin Cities. The greatest credit is due Dean Lyon not only for instituting and endeavoring to establish such a plan, but also for the tremendous amount of time and thought which he has devoted to the laborious details essential to its success. The scheme should meet with the fullest co-operation of all teachers and students in the Medical School, as well as that of the profession in general throughout the state. The scope and details of the plan as drawn up and submitted to us by Dean Lyon, follow:

With the Summer Quarter, 1919, the University of Minnesota Medical School hopes to put into operation a revised curriculum which will have for its purpose more intimate and individual undergraduate clinical instruction than has hitherto been possible. Incidentally the plan will enable the school to make fuller use of its facilities and will permit students to shorten the total time between matriculation in the Medical School and completion of the required intern year, by using the usual summer vacations for purposes of regular study.

The consideration of prime importance in leading the medical faculty to change the course of study arose out of the war. Young medical graduates were needed in the Army and Navy. As a result there was in the Twin Cities, as everywhere in the country, a shortage of graduate interns. Their places were take by senior students, who were permitted to substitute this student intern service for the usual required clinics of the senior year.

The result was unexpectedly satisfactory to both doctors and students. The former found the senior students to be very willing and fairly prepared helpers. The latter obtained a more intimate knowledge of medicine and surgery than the ordinary senior year with its clerkship and demonstration clinics is able to afford. A study of the situation was, therefore, undertaken to see whether it would be possible to include a certain amount of student internship in the ordinary four year course. It was found that the continuous session under the four quarter plan would permit this to be done. The University has voted to adopt this four quarter system provided the present legislature grants the support which will be necessary.

Under the Quarter System the calendar year will be divided into four terms, any three of which will constitute a school year as ordinarily understood. The proposed Quarters are as follows: Fall Quarter, from about October 1st through twelve weeks, followed by one week of Christmas vacation; Winter Quarter from about January 1st through twelve weeks, followed by one week of vacation;

Spring Quarter, eleven weeks, ending about June 15th; Summer Quarter, beginning at once and extending through eleven weeks, followed by a vacation of four weeks. Thus the University will be in session forty-six weeks out of each year.

As a result of the new plan of clinical instruction founded on the continuous four quarter system the Minnesota medical graduate will hereafter have spent eighteen months actual hospital residence before he graduated. The first six months will be a student internship under direct supervision of the Faculty. The last twelve months will be equivalent to the ordinary graduate internship and may be had in any approved hospital. The M. D. degree will not be granted until the completion of this work, which will be registered for and carried on under University rules.

The Junior and Senior years as divisions of the course of study will be abolished. Instead of these, the ten quarters of clinical study following the sophomore year will be divided as follows: (1) Introductory Clinical Period, two quarters, (six months); (2) Intermediate Clinical Period, two quarters; (3) Advanced Clinical Period (student internship), two quarters; (4) Regular Internship, four quarters.

The Introductory Clinical Period will correspond to the first six months of the Junior year. It will include the introductory didactic and laboratory courses in Medicine, Pediatrics, Obstetrics and Surgery, advanced work in Pharmacology, and clinics emphasizing physical diagnosis and primary acquaintance with the phenomena of disease.

In the Intermediate Period of clinical training will be concentrated the clerkships, as previously carried on in the senior year.

As clerks, students work a certain number of hours each day in the University Hospital under direct supervision of the staff, but they are not residents or interns. It is planned that in the intermediate period each clerk will be assigned two months to Internal Medicine, two months to Surgery, one month each to Pediatrics and Obstetrics. The clerks will write histories, make laboratory and physical examinations and follow the cases to which they are assigned through any operations that may be necessary. At the same time they will take lectures in the specialties, attend class and section clinics and have regular assignments to the various departments in the dispensary. But they will not, as Juniors and Seniors have previously done, attend clinics in distant centers like the City and County Hospital. It is believed that one of the large advantages of the new plan will be the saving of time involved in such trips.

In the third or Advanced Clinical Period the central idea will be the new feature of student internships. These will be had only in the hospitals directly affiliated with the University. It is expected that there will be eventually about fifteen places in the Minneapolis City Hospital; an equal number in the St. Paul City and County Hospital, and about ten in the University Hospital. Thus about forty students can be accommodated in this period, which naturally sets the limit of registration for each of the other periods as well.

As student interns these students will do the ordinary work of "junior interns." They will live at the hospitals and thus be enabled to follow their cases more closely than under the clerkship system, and they will have more responsibility. In the hospitals, however, they will still be in a large measure students. Their work will be supervised by resident instructors of experience and by the staff, which will further emphasize the educational aspect of this work by giving regular clinics for this group of students at the particular hospital to which they happen to be attached. Thus again the time of the students will be conserved. Also the responsibility of the staffs will be increased, as the staff of each hospital will have almost full educational charge of the group of student interns attached to the respective institution.

The student intern will go to the University two or three times a week for certain advanced lectures and will be engaged in the preparation of the thesis, which each must present at the end of this period. They will thus keep in close touch with the school. Final examinations in the clinical branches will complete the six months of student internship.

The year of regular internship follows and, as stated previously, may be in any approved hospital. It is expected that many students will go to distant institutions and thus get the advantage of other environments and the methods of other physicians. The School will appoint an educational advisor at the place of internship who will have charge of each intern wherever he may be, and a plan of reading and reports will be put in force which will emphasize the educational side of the intern year.

Under this plan it will be seen that in addition to the students in the regular Freshman and Sophomore courses, five groups of clinical students will at any one time be registered in the School: One introductory group, one intermediate group, one advanced group and two groups serving as regular interns. A group of the latter will complete their work and receive their M. D. degrees every six months. In other words the School will graduate two groups a year.

Those students who attend school four quarters of each year will save nine months on their medical course, including the internship. While this fact did not constitute a large argument with the Faculty in favor of this new system, it is nevertheless of some importance in view of the long course of study required to prepare men for modern scientific medicine.

While the School will undertake this new plan hopefully at this time, it is apparent that the fullest realization of its possibilities must await enlargement of the University Hospital. The value of the clerkship has been demonstrated at this and other schools. It is the pivot of the curriculum. In this period the student should begin his intimate and scientific clinical training. Here his habits of work should be established. A wide range of clinical material is necessary for this purpose. Consequently for this reason, if for no other, the University Hospital should be expanded. The interest of the physicians of the state is directed anew to this pressing need in the institution which means so much to the profession throughout the Northwest.

MEMBERS INVITED TO CONTRIBUTE TO THE STATE ASSOCIATION'S ANNUAL MEETING

The committee in charge of the program for the State Society meeting of 1919, to be held in Minneapolis, wish to remind all the members that the program both in Medicine and Surgery is not as yet entirely filled.

The work of a program committee is not easy. Those who have served in this capacity well know the difficulty in getting papers to represent all sections of the state. Men well qualified to write, and with broad experience, often seem loathe to commit themselves to working up some subject. It is strongly urged this year that every member who has material that he is working with and arranging, will early express his preference to the committee members, and they will do their best to arrange a meeting up to the usual standard.

We have in our state several independent and active medical societies, and many of the component societies that make up the state organization are in themselves very complete. On the other hand, it is doubtful whether many states have had a more vigorous association or one that from year to year has attracted better men to come and read papers from the outside, or a society that has stood better for the highest ideals in medicine. Let us all strive to make the meeting this year a greater credit than ever, and Minnesota an unusually active center of American Medicine.

GOLDEN JUBILEE

Victory Celebration

The fiftieth annual meeting of the American Medical Editors' Association will be held at the Marlborough-Blenheim Hotel, Atlantic City, on Monday and Tuesday, June 9th and 10th, and will take the form of a semi-centennial celebration and a Victory Meeting, emphasizing the part which this Association and its members have taken in the world's war.

The enthusiasm manifested upon the part of the President, Ex-Presidents and officers of this Association is an assurance of its successful outcome.

A most attractive program is now being prepared and every physician, even remotely interested in medical journalism, will find it to his advantage to attend.

REPORTS OF SOCIETIES

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

Annual Session Held at Mankato, January 20 and 21, 1919.

First Day—Evening Session.

The association held its annual banquet at Masonic Hall, Monday evening, January 20th.

After an address of welcome by Dr. J. W. Andrews, chairman of the committee of arrangements, the president, Dr. M. S. Henderson, of Rochester, took the chair.

Honorary recognition by the association was given to two of its most worthy veterans, Dr. J. H. James, Mankato, and Dr. George F. Merritt, St. Peter.

In the absence of Dr. J. H. Adair, Owatonna, who was scheduled to make a speech regarding his acquaintance and friendship with these men, the president called upon Dr. William J. Mayo, of Rochester, to perform this pleasant duty. Dr. Mayo said:

"Mr. President, Members of the Southern Minnesota Medical Association, Ladies and Gentlemen: I know that Dr. Adair deeply regrets that professional engagements prevented him from being here on this occasion. His kindly heart would have rejoiced in the opportunity to pay homage to our guests here this evening. In his absence, I wish to assure you that I esteem it a privilege to congratulate these old friends of ours, the friends of all of us, on this occasion.

"Dr. Andrews has said that this association is equal to, if not greater than, the state association. I want to say to you, members of the Southern Minnesota Medical Association, that this should not be true; that every man who is here is potentially a member of the state medical association, and he should attend the meetings of the state medical association as the representative body of this state." (Applause.) "After all, we are a local society, but we have very great traditions.

"When I think of the men that have composed the Minnesota State Valley Association and the Southern Minnesota Society, and when I think of that old patriot, a gentleman of the old school, Dr. Daniels, now in California, I am deeply impressed with the high type and character of such men. I understand that Dr. Daniels is in his ninetieth year, and I wish it were possible for our secretary to telegraph him our love and esteem and let him know that we have not forgotten him on this occasion." (Applause.)

"Mankato has furnished us with men who have done much. We have had Dr. Harrington and Dr. Warner; we have had Dr. Cummings of Waseca; Dr. Hill of Pine Island; Dr. Day of Plainview; Dr. Charles Hewitt of Red Wing, who was secretary of the State Board of Health for nearly thirty years when I was a younger man, and we have had Dr. Millikin, and Dr. Lincoln and these two perfectly splendid men we have with us tonight, to say nothing of Dr. W. W. Mayo, of Rochester. It was the men of this type and character that have made this association what it is. We today are reaping the benefits of the work that these men did. It is a great pleasure to me to have known these men, how they worked, what they did, and their relations to the community. When I remember the justice and honor and interest with which they pursued their professional labors and the place they held in their respective communities, they established a record which it is up to us to emulate and maintain.

"We have as our guests here this evening two men who belong to the time of those men I have spoken about, men who have done much for medicine and surgery in southern Minnesota.

"I wonder if we all know just how we would define the word 'character.' Character is the best attribute of man, and we know men by their character, and when we say character to those of us who know Dr. James and Dr. Merritt, we know that these men represent what we mean when we say character; men of character, of courage, of ability, of integrity. These are the type of men that have laid the foundations for this association. They have shown us by precept and example. We have to thank them for other things.

"Dr. James was one of the first to show that a specialty could be practiced in a comparatively small town. Much as we admire the magnitude of Mankato with our friend Dr. Andrews, after all, all of the people in a small community and the country surrounding are not able to go to the large cities to get the best things that medicine has in the way of specialties, and Dr. James was one of the first men to carry these things to the patient. In practicing a specialty in a small town he has done much not only to forward that specialty but to supply his community with the very best and latest information that could be had as well as the highest degree of skill. He has not only brought those things to the people and to us, but has helped to spread the information that it is possible in a small town to have hospitals, to have specialists, and to have such things as heretofore had only been enjoyed in the cities.

"Dr. Merritt was a different type of a man in a way, because he was one of the first who became a consultant in a small country town. Certain men here and there throughout the country communities have by their force, integrity, by their character and by their experience, practically become consultants of the community, and Dr. Merritt is one of those men who has become a consultant of the community and a wise counselor of the Southern Minnesota Medical Association. (Applause.)

"Tonight we wish to present to these men two canes. Why a cane? Because each time that they grasp this cane in their hand they will feel that they are grasping in friendship the hands of the members of this association.

"Dr. James, we hand you this cane (handing a gold cane to Dr. James) with the love and esteem of the members of the Southern Minnesota Medical Association. We congratulate you that we have you with us. We congratulate ourselves even more that you are still a young man and can still by your wise counsel direct the footsteps of this association further. (Applause.)

"Dr. Merritt, we hand you this cane with the love and esteem of this association, and I can only say, as can be said of you, that when we have reached the time of life and hold the same place in the community and in the hearts of the profession that you have; when we can meet as you can meet the Great Reaper, it will be gratify-

ing if it can be said of us as it can be said of you, 'Well done, thou good and faithful servant." (Applause.)

Dr. James and Dr. Merritt responded to the remarks of Dr. Mayo with feelings of gratitude for presenting the canes and for the great honor and distinguished recognition accorded them.

Dr. A. F. Schmitt, chairman of the Program Committee, spoke of the excellent work the association was doing and of the good feeling which prevailed among the members.

Dr. Henry J. O'Brien, St. Paul, responded to the toast, "The Minnesota Medical Man in the Service at Home and Abroad."

Mr. George W. Peterson, St. Paul, delivered an address entitled, "Legal Aspects of Medicine and Surgery."

The president, Dr. M. S. Henderson, delivered his address. He selected for his subject, "Fractures Considered as Potential Deformities."

Dr. Edward C. Rosenow, Rochester, followed with an illustrated talk on "Prophylactic Inoculation Against Pneumonia and Influenza."

The remarks of Dr. Rosenow were discussed by Drs. A. F. Schmitt, J. W. Andrews, W. L. Beebe C. E. Smith, R. N. Andrews, after which the discussion was closed by Dr. Rosenow.

On motion, the association adjourned until 8:30 A. M., Tuesday.

January 21st—Second Day—Morning Session

Annual Business Meeting.

The association met at 9 A. M. and was called to order by the president.

The president appointed as a Committee on Resolutions, Dr. W. L. Beebe and Dr. Earl A. Loomis.

Dr. G. F. Merritt presented his report as treasurer which showed a balance on hand up to January, 1919, of $142.27.

It was moved that the report of the treasurer be accepted as presented.

Seconded and carried.

Dr. William J. Mayo extended an invitation to the association to hold its next meeting in Rochester.

Dr. W. L. Beebe moved that the invitation of Dr. Mayo be accepted.

Seconded and carried.

Dr. J. W. Andrews called attention to a bill before the legislature favoring a system of hard surface roads throughout the state, carrying with it an appropriation of $100,000,000. He therefore moved that the association put itself on record as heartily endorsing the Babcock bill for good roads.

Seconded by Dr. W. L. Beebe.

Dr. A. F. Schmitt said a representative of the Good Roads Commission (Mr. John Homans) would speak before the association this morning on this subject, and he moved to amend that this matter lie on the table until after the representative of the Good Roads Commission had been heard.

The amendment was seconded, accepted and carried.

Dr. Earl A. Loomis, Minneapolis, read a paper entitled "Refractive Needs of Children," which was discussed by Drs. E. W. Benham and W. L. Beebe, after which the discussion was closed by the essayist.

Dr. J. D. Lewis, Minneapolis, followed with a paper entitled "Acute Mastoiditis," which was discussed by Dr. Lillie, a member, and discussion closed by the essayist.

Dr. M. J. Jensen, Minneapolis, read a paper on "Placenta Previa and Abruptio Placentae," which was discussed by Drs. Masson and MacLaren.

Dr. William J. Mayo, Rochester, read a paper entitled "Some of the Old Hospitals of London, with Special Reference to the Surgical Treatment of Fistula-in-Ano as Perfected at St. Mark's."

The paper was discussed by Dr. MacLaren, after which the discussion was closed by the essayist.

Dr. A. E. Wilcox, Minneapolis, read a paper on "The Open and Closed Treatment of Fractures; New Methods and New Apparatus Used."

Discussed by Drs. John E. Lord, Omaha, Nebraska, Dr. Emil S. Geist, M. S. Henderson, A. F. Schmitt, and discussion closed by the essayist.

Dr. J. W. Andrews announced that a complimentary luncheon would be given at the Masonic Temple by the physicians of Mankato.

Mr. John Homans was introduced and spoke on the subject of permanent road improvement in the State of Minnesota, saying that Mr. Charles M. Babcock had introduced a bill into the legislature providing for intercounty hard surface roads to be built in the state. This intercounty system would cover every county seat and would afford means of excellent travel for approximately eighty per cent of the population of the state. The estimated cost for carrying out this system was approximately $100,000,000.

At the conclusion of Mr. Homan's remarks, Dr. William J. Mayo moved that the association memorialize each one of the representatives from southern Minnesota, both in the House and in the Senate; that the association heartily endorse the scheme of Commissioner Babcock, and that the secretary of the association be instructed to notify these representatives of the action taken.

Motion seconded by Dr. W. L. Beebe and carried unanimously.

Dr. E. S. Muir, chairman of the Committee on Nominations and New Members presented the following report:

The following have been nominated to fill offices for the ensuing year:

President, Dr. John Williams, Lake Crystal; first vice-president, Dr. W. E. Sistrunk, Rochester; second vice-president, Dr. W. J. Richardson, Fairmont; secretary, Dr. H. T. McGuigan, Red Wing; treasurer, Dr. F. G. Merritt, St. Peter.

Dr. Muir moved that the secretary be instructed to cast the ballot of the association for the election of these officers.

Seconded and carried.

The secretary cast the ballot as instructed and they were declared duly elected.

Dr. Williams thanked the association for the distinguished honor conferred upon him in electing him presi-

dent, and said he would do his best to fill the office with credit to himself and to the members.

Dr. Muir presented the following list of new members:

Emil S. Geist	Minneapolis
Archibald MacLaren	St. Paul
Maurice Dana Corper	Winnebago
O. W. Rowe	Duluth
H. P. Dredge	Sandstone
Edward L. Tuohy	Duluth
James C. Masson	Rochester
Carl A. Hedblom	Rochester
Ernest Z. Wanous	Minneapolis
Hugo J. Hartig	Minneapolis
Louis E. Daugherty	St. Paul
James Farrage	Winnebago
L. D. Peck	Hastings
R. S. Radabaugh	Mazeppa
A. E. Wilcox	Minneapolis
William L. Benedict	Rochester
Harry G. Irvine	Minneapolis
Arch H. Logan	Rochester
Henry Blong	Elmore
C. A. Donaldson	Minneapolis
C. M. Roan	Minneapolis
G. M. Lisor	St. James
Walter E. White	Howard Lake
James E. Merrill	Amboy
Georgine Luden	Rochester
V. C. Hunt	Rochester
Walter G. Nuessle	Springfield
H. W. Reiter	Shakopee
Otto J. Seifert	New Ulm
Felix C. Dolder	Eyota
M. J. Jensen	Minneapolis
V. J. Stachniewicz	Winona
Andrew J. Kaess	Fargo, North Dakota
W. L. Burnap	Fergus Falls
J. H. Beaty	St. Cloud
G. Schmidt	Lake City
Earle R. Hare	Minneapolis
J. T. Bowers	Lake City
John H. Stokes	Rochester
Matthew J. Fitzpatrick	Mason City, Iowa
A. C. Broders	Rochester
Earl A. Loomis	Minneapolis

Dr. Muir moved that the secretary cast the ballot of the association for the election of these new members.

Seconded and carried.

The secretary then cast the ballot as instructed and they were declared duly elected.

On motion, the association adjourned until 2 P. M.

Second Day—Afternoon Session

The association reassembled at 2 P. M. and was called to order by the president.

Dr. C. A. Donaldson, Minneapolis, read a paper entitled "Roentgen Examination in Eye Injuries With Foreign Body Localization," which was discussed by Drs. W. L. Benedict, J. D. Lewis, and in closing by the essayist.

Dr. Harry A. Baker, Minneapolis, read a paper entitled "A Neisser—Luetic Outlook," which was discussed by Drs. Harry Irvine, F. R. Wright, and in closing by the essayist.

Dr. C. A. Hedblom, Rochester, read a paper entitled "The Treatment of Chronic Empyema," which was discussed by Dr. S. C. Schmitt.

Dr. E. J. Huenekens, Minneapolis, read a paper entitled "Child Welfare Division of the State Board of Health," which was discussed by Drs. Helen Hilescher, R. N. Andrews, and in closing by the essayist.

Dr. A. C. Broders, Rochester, read a paper entitled "Basal Cell Epithelioma," which was discussed by Dr. Gordon B. New, a member, and in closing by the essayist.

Dr. Arthur H. Logan, Rochester, followed with a paper entitled "Chronic Ulcerative Colitis," which was discussed by Dr. Edward L. Tuohy, after which the discussion was closed by the essayist.

Dr. J. W. Andrews moved that any small bills that came in, properly approved, be paid by the treasurer.

Seconded and carried.

Dr. Henderson moved that the Southern Minnesota Association extend a vote of thanks to the members of the local Committee of Arrangements for their fine entertainment and for the hospitality extended during the meeting.

Adjourned. H. T. McGuigan, M. D., Secretary.

OF GENERAL INTEREST

Dr. A. M. Crandall formerly of Fairfax has moved to Madison, Minn.

Dr. E. W. Humphrey was recently elected Mayor of Moorhead, Minn.

Dr. J. E. LeClerc has returned to his practice in Le Sueur after several months in Government service.

Dr. H. D. Burns has been appointed official resident physician for the Minneapolis and St. Louis railroad.

Dr. Charles Germo, Balaton, Minn., who has been in France for several months recently returned to Balaton.

Dr. A. M. Hanson who recently returned from France expects to return to his practice in Fairbault in a short time.

Dr. Lawrence F. Fisher, formerly of Dickinson, N. D., has become associated with Dr. F. H. Gambell of Thief River Falls, Minn.

Dr. H. B. Zimmermann who has been with Base Hospital No. 26, France, has returned to St. Paul, and resumed practice.

Dr. E. A. Rumreich of Mahnomin, Minn., who has been stationed at Camp Logan, Texas, has returned after being absent for nearly a year.

Dr. Ernest Gillmore who recently received his honorable dicharge from the army, has become associated with Drs. Benson and Sandven of Willmar, Minn.

Word has recently been received that Dr. Wallace Cole, St. Paul, who is in active service with the United States forces, has been promoted to the rank of Major.

Dr. M. C. Piper of Sanborn, who has been honorably discharged from the army, has been spending a few weeks in Chicago before returning home to resume his practice.

Dr. Harris D. Newkirk who has been stationed at Camp Humphreys, Va., has been honorably discharged from the army and has returned to his home in Minneapolis.

Dr. Ida M. Alexander who spent nearly two years in Red Cross work among the refugees of the war stricken area of northern France, recently returned to her home in Sauk Center, Minn.

Through an unfortunate error the name of Dr. C. M. Oberg, Minneapolis, appeared in the obituary columns of the March issue. The notice referred to Dr. C. Oberg, dentist of Minneapolis, and our deep apologies are due to Dr. C. M. Oberg.

Dr. J. R. Nannestad of Albert Lea, Minn., who was commissioned a lieutenant in the army last summer and who was confined to a hospital in Minneapolis for many weeks following his discharge in December, has resumed his practice in Albert Lea.

Dr. H. B. Weinburg, Waterville, who entered the medical corps of the army last year as a first lieutenant and saw service in France for several months, is now back in America. He was wounded twice while on duty and has been recommended for the French Croix de Geurre for bravery in caring for the wounded under fire.

The Upper Mississippi Valley Medical Society, at its annual meeting at the Chamber of Commerce rooms in Brainerd, February 13th, elected as officers: President, Dr. A. W. Ide, Brainerd; vice-president, Dr. A. V. Fankboner, Motley; secretary-treasurer, Dr. J. A. Evert, Brainerd; censor for three years, Dr. J. A. Thabes, Brainerd; delegates to the State Medical Society, Dr. P. Kenyon of Wadena and Dr. L. M. Roberts of Little Falls.

Dr. J. A. Rippert of Chisholm, Minn., has been appointed an assistant to Dr. E. E. Webber, chief surgeon of the Duluth, Mesabe and Northern railroad, and will handle the railroad work at Proctor according to an announcement by Dr. Webber recently. Further appointments of assistant surgeons in the D. M. & N. service as announced by Dr. Webber are as follows: Dr. C. E. Lum, oculist, Duluth; Dr. D. C. Rood, Hibbing; Dr. S. S. Blacklock, assistant, Hibbing; Dr. A. B. Kirk, Chisholm; Dr. C. V. Malmgren, Virginia; Dr. C. W. Bray, Biwabik; Dr. C. W. More, Eveleth; Dr. N. D. Kean, Coleraine; Dr. J. P. Caldwell, Coleraine; Dr. L. F. Hulsman, Marble; Dr. A. W. Shaw, Buhl.

A joint influenza committee has been created to study the epidemic and to make comparable, so far as possible, the influenza data gathered by the Government departments. The members of this committee, as designated by the Surgeon General of the Army, the Surgeon General of the Navy, the Surgeon General of the Public Health Service, and the Director of the Census, are: Dr. William H. Davis, chairman, and Mr. C. S. Sloane, representing the Bureau of the Census; Dr. Wade H. Frost and Mr. Edgar Sydenstricker, of the Public Health Service; Colonel D. C. Howard, Colonel F. F. Russell, and Lieutenant Colonel A. G. Love, United States Army; Lieutenant Commander J. R. Phelps and Surgeon Carroll Fox, United States Navy.

The first inter-Allied medical aeronautical congress opened at Rome, March 10th, its object being to promote the study of medical problems arising from aviation. The United States was represented at the congress by Dr. L. G. Rowntree of the University of Minnesota. Resolutions dealing with physical and psychological tests applicable to candidates for pilots' licenses, the control of flights to high altitudes and the use of oxygen by aviators were presented, and the hope was expressed that these resolutions would be taken into account when an international aerial code is drafted. It was decided to form a permanent committee to present the views of the medical profession in matters pertaining to aviation. Prof. Guillain of the University of Paris was elected president of the body.

The University Hospital, which was wholly turned over for influenza patients for some weeks, is again open to receive, free of charge, the indigent sick of the state. In order that the institution may serve both the public and the medical students to the best advantage

it is necessary to have a variety of cases. In this regard attention is called particularly to the eye and ear service. Many suitable cases are not sent early enough to receive maximum benefit. Physicians who have such patients, entitled to be received at the University Hospital, are asked to write to the University Hospital in regard to them and application blanks for admission will be sent to them. In cases of emergency the waiting list will be disregarded, and doctors may obtain admission for patients by phone or wire.

Lieutenant Bernard J. Gallagher, former Minneapolis physician who was taken prisoner in March, 1918, at Amiens, France, while caring for twenty wounded soldiers, and held in a German prison camp for nine months, has returned and is now at his home in Waseca, Minn. Dr. Gallagher was captured when the British battalion with which he was stationed moved back, and he remained at his post, while being surrounded by Germans. He was assured by a German officer that trucks would take them back to their lines, but the British tried to retake the sector, and between fire from both lines, the men remained two days without food or drink. Three of them died. They were then moved to a German hospital. During his three weeks there, Dr. Gallagher was not permitted to care for the German wounded. Their only fare consisted of soup made from horse meat. Dr. Gallagher spent eight months at the German prison camp at Villingen, where the food was enough to sustain life, he said. The wired enclosure surrounding the wooden barracks was brilliantly lighted day and night to prevent escape. Five prisoners escaped one night by throwing a weighted wire on the wire fence, and grounding it which caused complete darkness, but the men were recaptured. Since he was released from the prison on November 28th, Dr. Gallagher visited France, Switzerland, Scotland and England.

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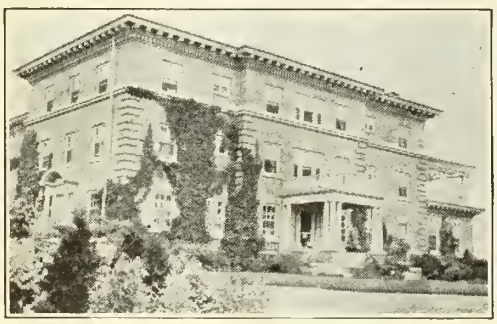

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Minnesota Medicine

Journal of the Minnesota State Medical Association

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ORIGINAL ARTICLES

BISMUTH PASTE IN WAR SURGERY

Emil G. Beck, M. M., F. A. C. S.
Chicago.

The author presented a resume of his work on Bismuth Paste treatment in chronic suppurations due to disease and also crushing wounds, illustrating the technic by means of moving films. The results obtained eliminate at least sixty-five per cent of all chronic suppurations, after they have gone through the usual procedure of surgical treatment. The balance of thirty-five per cent he treats by the skin sliding operation, without any suture of the skin flap. Illustrations of cases were shown by slides. The results were most satisfactory, since it eliminated nearly all the cases which had resisted previous surgical as well as Paste treatment.

The principal points brought out were as follows:

Errors in Technique

1. The method is often applied indiscriminately, without control by radiograms.

2. The mixture, when injected, is not sufficiently liquefied to fill all the sinuses and suppurating cavities.

3. The bismuth is applied in cases in which either a sequestrum or infected foreign body is at the bottom of the trouble.

4. The injections are often kept up after the wound is sterilized and thus no chance is given for healing.

5. The instruments used are often improvised and unsuitable.

6. The bismuth mixture is very often spoiled by the accidental mixture of a few drops of water. (Syringes should be perfectly dry when used.

The sinus or fistula is nothing more than a shrivelled abscess or abscesses. It leads from its opening on the skin or into the bowel to the place where the disease originated, and this focus of disease is often at a considerable distance from the opening or openings of the sinus. It is therefore inconsistent to try to eradicate the suppuration by only dissecting the sinus tracts. With the radiographic reproductions of the labyrinths or sinuses before us, an attempt to dissect the same would be absolutely hopeless.

If the focus from which the sinus originated is reached and disinfected, in practically all instances the sinuses will close up. It is therefore essential that when a fistula or sinus is injected with Bismuth Paste, it must reach the focus of the disease. If, through faulty technic, this is not accomplished, good results can not be expected.

Indication

A. All sinuses resulting from chronic suppurative joint affections, tuberculous as well as non-tuberculous. This includes the sinuses especially after spondylitis and hip joint diseases.

B. Sinuses after osteomyelitis of long bones and flat bones, including ribs.

C. Sinuses resulting from suppurative diseases of parenchymatous organs, such as the kidney and other glandular structures in the body, including suppurative tuberculous glands.

D. Post-operative sinuses which sometimes remain after draining infected wounds.

E. Sinuses after empyema of the pleura or from lung abscess.

F. In cases of abscess and suppuration of the mammary glands.

G. In all infected wounds due to crushing injuries.

H. In infected and long suppurating war wounds due to shrapnel or bayonet injury.

It has already been tested in these and found most effective. The rapid accumulation of this class of cases due to the present war in Europe will furnish a tremendous amount of material for treatment.

I. In rectal fistula or pararectal abscesses.

K. By Oto-Laryngologists in the treatment of suppurative antrum disease and accessory sinuses, as well as in the after treatment of mastoid operations.

L. By dentists in suppurative sinuses about the teeth and jaws and in pyorrhea alveolaris.

M. It has also been used by us in chronic endometritis.

N. In the prevention of sinuses by incising the cold abscess and injecting it with a five per cent Bismuth Paste.

Summary

To insure success in employing Bismuth Paste the essential points are summarized as follows:

1. One should make a correct diagnosis by all the methods at his disposal and corroborate the same with stereoscopic radiograms, before an injection is made.

2. Before attempting to employ this method one should acquaint himself thoroughly with the technic.

3. The proper instruments should be employed in order to carry out the technic correctly.

4. The patient should be kept under constant observation to prevent bismuth intoxication.

5. Examine the secretions from the sinus before the first injection, by slide and culture, and often by the inoculation of guinea pigs; then three days later test the sterilizing effect of the injection.

6. As long as the sinus contains microorganisms it should be reinjected but if it is found sterile, it should not be reinjected.

7. It is good practice to wait at least one week after the first injection before repeating it.

8. A stereoscopic radiogram of the parts affected should always precede the first injection, in order to detect the presence of foreign bodies. The shadow of the paste might make their presence obscure.

9. Following the injection a second set of stereoscopic radiograms should be taken in order to make a correct anatomical diagnosis.

10. In case a foreign body or sequestrum is present, the injection is useless, operation the only means.

11. Acute suppurative processes should not be treated with Bismuth Paste, only chronic suppurations, both tubercular and non-tubercular.

12. Bismuth poisoning may be easily prevented by using only small quantities or when large quantities are required they should not be retained longer than ten days, and the patient should be carefully watched.

13. Fecal fistula and other post-operative sinuses are very favorably affected by Bismuth Paste treatment.

14. A ten per cent bismuth vaseline may be used in cold abscesses. In practically all instances the secondary infection can be prevented, providing the technic is carefully observed.

SUPPLEMENT TO THE ABSTRACT ON BISMUTH PASTE TREATMENT OF WOUNDS

Emil G. Beck
Chicago

After all these rules of the Bismuth treatment have been observed and the cases treated for a sufficiently long period and persist in discharging, they should not be given up as entirely hopeless, because in our experience we have found that by a surgical measure, based on certain surgical principles, we have been able to close up the majority of these apparently hopeless cases.

The procedure is as follows:

Skin Sliding Operation for Osteomyelitis

After the diseased area is located by means of roentgenograms, it is freely exposed by cutting away all the unhealthy skin and scar tissue. The diseased bone is then thoroughly curetted or chiseled away until one is certain that there is not a vestige left. Should this produce a deep groove, it must be converted into a very shallow one or even into a flat surface, by cutting away a sufficient quantity of healthy bone on either side.

After this is done, a skin flap is cut from one or each side, sufficiently large to cover almost

the entire denuded bone surface, care being taken, however, that no subcutaneous fat is carried with it. The flaps are then shifted into the depth of the cavity and retained there by packing gauze against them. It is not absolutely necessary that every part of the bone cavity should be covered. The skin will grow from the edges of the flaps until every portion of the raw bone surface is covered with true skin. To prevent retraction or slipping of the skin flaps, I have frequently used a carpet tack to fasten temporarily the tip of the skin flap to the bone until adhesion has taken place. The areas of muscle and subcutaneous tissue which have been exposed by sliding the skin are left denuded. No attempt should be made to bring their edges together by suture or otherwise. In only very rare instances has it been necessary to use any suture material whatever, except, of course, the ligation of bleeders.

Forty-eight hours later the gauze pack which has kept these flaps in apposition to the denuded bone surface is removed, and it will be found that firm adhesion has already taken place. In one case, in which an assistant displaced one of the flaps during the application of the dressing immediately after the operation, I was unable, twenty-four hours later, to replace the skin flap in its proper place, until I had loosened it with a raspatory. The rapidity with which adhesion of the skin to the bone takes place is remarkable.

The after-treatment is most interesting. As soon as granulations on the denuded surfaces from which the skin has been removed, begin to form, strips of adhesive plaster are applied, covering the margins of the skin border and the granulating surface all around the wound. This procedure will produce rapid epidermization of the denuded surface. The adhesive is changed daily. Within two or three weeks large areas will be covered by healthy skin and in practically every instance the suppuration will stop after the denuded area has been epidermized. Small scars, of course, remain but will gradually shrink, so that a denuded surface the breadth of three fingers will have a scar no wider than one-half centimeter.

When the wound is not too deep, the skin flap may be omitted. It is simply left widely gaping and packed with gauze and allowed to granulate from the bottom. Later on adhesive plaster is put on the edges of the wound.

I have employed this method of skin sliding in a variety of cases; osteomyelitis of the femur, tibia, in hip-joint disease, in knee-joint disease, in the removal of the oscalcis and of the metacarpal bones, in osteomyelitis of the ribs and of the sternum, and in other cases, including infected fractures and other injuries.

The same principle may be employed in cases of empyema and lung anscess. I have described this in detail in the March number of Surgery, Gynecology and Obstetrics:

"Sutureless Skin-Sliding Method for the Radical Treatment of Lung Abscess and Chronic Osteomyelitis"

and cited interesting cases for illustration. Thus far my experience in this treatment is limited to about sixty cases, consisting of a variety of bone and joint diseases, such as osteomyelitis of the femur, hip joint, knee joint, tuberculous of the ribs and sternum, about ten cases of tuberculous ankles, and five cases of dermoid cyst of the sacrum. There was no mortality in the osteomyelitis cases and only three out of fifteen in the lung cases, two of which were due to anesthesia and one of brain abscess. The end results are most satisfactory. The apparently hopeless cases operated about a year ago are now entirely well and out of the entire series only the recent cases operated upon are not yet closed and the treatment progressing most satisfactorily.

For illustration, I cite a few cases from the series treated with Bismuth Paste with or without surgical operation.

Spondylitis with Multiple Sinuses

Bismuth Treatment Without Operation

N. O., fourteen years old, developed a tuberculous spondylitis when two years old. Multiple abscess formed, not only in the back in the region of the sacrum but also above both Poupart's ligaments, so that at the age of eight he was riddled with multiple sinuses, as shown in Fig. I. (This picture illustrates the technic of injection of one sinus and occluding the other openings as soon as the paste appears to exude from them, so that the channels may be filled).

Fig. I. Condition at Age of Eight Years.

The child was then in a pitiable condition, had never walked since it was born, and could not extend its lower limbs, same being flexed upon the abdomen and rigid.

The bismuth treatment was than carried out for six months and improvement was so rapid that he was able to crawl on his hands and feet across the room. The treatment was interrupted for one year, although some of the sinuses still discharged slightly. In 1914 the treatment was resumed and all the sinuses closed except two, one above the right Poupart's ligament and one in the region of the right crest of the ilium. He was then able to walk erect and take part in all children's play, including base ball.

Fig. II. Patient Six Years Later, Able to Bend. Sinuses Closed.

Fig. III. Patient Able to Stand Erect.

In 1917 the bismuth treatment was resumed, to close the last sinus. Injecting the sinus in the region of the ilium, the paste would appear in the opening above Poupart's ligament. This sinus closed also and the boy is able to stand erect, as shown in Fig. III, and is able to bend to a degree as shown in Fig. II. The agility with which this boy can now move about is surprising to those who have seen him at the age of eight, when no one expected that anything could be done in the case.

Fig. IV. Drainage in Six Places.

Fig. V. Sinuses Closed After Injection.

Fig. VII. Flexion.

Crushing Injury of Foot Treated With Bismuth Paste

E. P., a man of twenty-two, while riding a motorcycle, was run over by a motor truck. The right foot was crushed completely by the heavy wheel (see Fig. IV). The heel having been torn away, it was replaced and gauze drains introduced. On account of the virulent type of infection, condition grew worse, the fever rose to 105 degrees, so that an amputation was contemplated. Gradual improvement, however, took place and a profuse chronic suppuration from six different sinuses resulted, persisting for two months.

Injection of bismuth paste was then resorted to. Within three days the purulent discharge became serous in character. From then on the condition improved rapidly and the sinuses began to close. (Fig.V). Within two months the limb was entirely healed and gradually assumed normal shape. Patient is now able to walk without the use of a crutch. (Fig. VI and VII show the foot in flexion and extension.)

Infection of Bone Plates. Treatment With Bismuth Injections Subsequent Skin Flap Operation

A young man of twenty sustained a fracture of his left fibula. There was no abrasion on the skin. One week later a surgeon performed an operation, splinting the fragments with

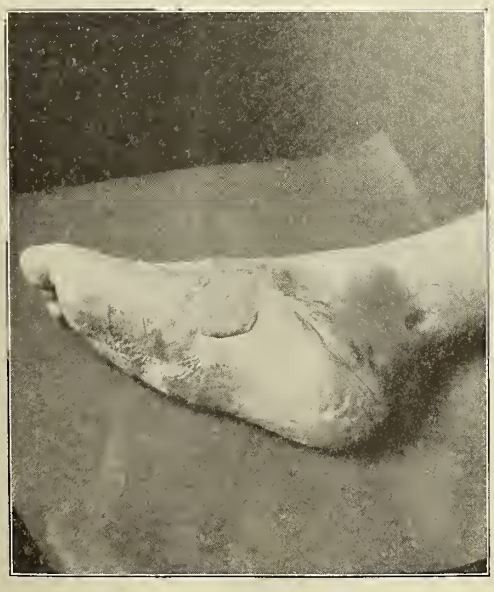

Fig. VI. Final Result (Extension).

Fig. VIII. Necrosis of Skin and Muscle.

Fig. IX. Four Days After Skin Sliding Operation.

Fig. XI. Two Months After Operation.

two steel plates. The day following the operation the young man developed a most extreme chorea, so severe that it required two men to hold him in bed. A week later I saw him in this condition. On removing a part of the cast, we found the entire area of incision in a semi-gangrenous condition, the sutures having cut through the tissues and pus oozing from all parts of the edematous and inflamed limb. (See Fig. VIII.)

The bone plates were removed and the infected wound was treated with bismuth paste injections for two weeks. No irrigation was employed. Subsequently the remaining cavity was curetted and a skin flap about two and a half inches wide and four inches long was denuded from the edge and shifted into the depth of the wound. Gauze was packed against it so as to keep it in place for healing. Adhesion of skin flap took place and growth of skin from the side of the flap progressed rapidly (as seen in Fig. IX, taken four days after the operation). The denuded surfaces of muscle and connective tissue were treated by the adhesive plaster method and skin gradually covered the entire denuded surface, as seen in Figs. X and XI. The chorea gradually disappeared, the patient gained thirty pounds and is now able to walk without a cane.

Fig. X. Fourteen Days After Operation.

To resume I would state that the primary-surgical treatment of infections are so effective as to leave very few cases of protracted suppuration. Surgeons have now developed efficient methods, such as the Carrel-Dakin irrigation with hypochlorite and diachlormin-T method, and the total excision of infected wounds in the early stages, which have produced a remarkable diminution in the number of persistent suppurations. The cases which continue to suppurate after these efficient methods have been employed, should be treated with bismuth paste. This method properly employed, will close at least seventy per cent of these refractory cases and only thirty per cent, a very small residue, will remain. For these we again recommend the Sutureless Skin-Sliding Operation here described.

By this systematic plan of treatment, we shall in time be able to cope with almost all cases of one of the most troublesome surgical complications, namely, persistent chronic suppuration.

FRACTURES CONSIDERED AS POTENTIAL DEFORMITIES*

M. S. Henderson, M. D., F. A. C. S.
MAYO CLINIC
Rochester, Minn.

Every fracture has within itself the tendency to leave varying degrees of deformity and disability in its wake; any fracture should, therefore, be regarded as a potential deformity. The fact that the treatment afforded fractures as a whole usually gives good functional results indicates that the mechanical principles underlying the treatment are quite simple. In certain types of fractures, particularly those in the vicinity of joints, deformities are especially prone to occur. These deformities are seen with such frequency in an orthopaedic clinic that, even at the expense of appearing tedious, I shall call your attention to a few of the commonest types, and emphasize some of the measures that may be used in their prevention.

The surgeon when confronted with a fracture must make an exact diagnosis and base his treatment on that diagnosis. Fortunately, we have in the radiograph the means at hand definitely to show the break and the relation of the fragments. Unless for very good reasons, for example the inaccessibility to a radiographic apparatus, the poor condition of the patient, etc., a radiograph should be taken of every fracture or suspected fracture. The picture intelligently interpreted settles the pathology at once and affords the sound basis so necessary for rational treatment.

The Shoulder Joint

Following a fracture in the region of the shoulder joint, the usual disability is lack of abduction and outward rotation. This may ensue even when the reduction of the fracture is perfect, since the inflammatory exudates cause periarticular adhesions. If the disability is due solely to periarticular adhesions, it is readily relieved by breaking them up under an anesthetic, followed by massage and the active exercise of the joint; if it is due to an actual bony deformity, it is clearly the fault of the setting.

In a fracture of the anatomical neck, if reduction cannot be perfect without an open operation, a slight amount of displacement may be permitted and the operation avoided as there is almost always good impaction and union is sure to occur. The danger lies in the limitation of motion that may follow. If the patient can stand the confinement, he may be put to bed with the arm abducted to a right angle, the position being maintained by a Buck's extension with a light weight attached. At the end of two weeks union will be sufficiently firm so that the arm may be gradually dropped to the side. The abducted position to a right angle should be resumed by passive motion at least three times daily.

If the fracture is situated at the surgical neck, the tendency is for the pectoralis, major the teres major and the latissimus dorsi to draw the lower fragment inward. The supraspinatus, infraspinatus and teres minor, as opposed to the subscapularis, tend to abduct and outwardly rotate the head and upper fragment (Fig. 1). The tendency of the biceps and triceps is to pull the lower fragment up and past the lower end of the upper fragment. If malunion occurs in this position it is readily seen that abduction and also outward rotation will be limited. If satisfactory reduction and firm impaction by strong extension (best conducted in abduction to a right angle or in the extreme position with the arm parallel to the head) can be accomplished and the ends impacted, the arm may gently be brought to the side and strapped there after an auxillary pad is placed in position. If the arm is held in abduction at a right angle after reduction and impaction, the pull of the pectoralis major, latissimus dorsi and teres major is in the long axis of the bone and the muscles do not tend to slip the fragments past one another (Fig. 1). The maintenance of the arm in abduction by a Buck's extension for two weeks, followed by the gradual dropping of the arm with tri-daily resumption of right angle abduction, is a form of treatment which ensures a good result. In the case of a bad intra-articular fracture in which ankylosis or marked limitation of motion is unaviodable, the ankylosis should be allowed to occur with the arm in abduction at a right angle. The movement of the scapula on the thorax,

*President's address before the Southern Minnesota Medical Association, Mankato, January 20-21, 1919.

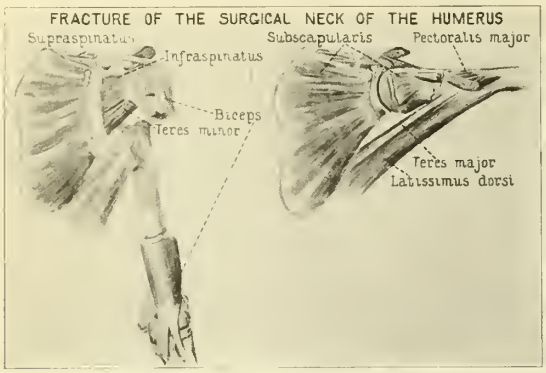

Fig. 1. Fracture of the surgical neck of the humerus.

when the head of the humerus is ankylosed at a right angle to the neck of the scapula, permits a very satisfactory range of motion for the arm.

The Elbow Joint

Fractures near the elbow joint are noteworthy for the bad results that may ensue. The common deformity is lack of ability to flex the elbow sufficiently to permit of ability to dress, for example putting on a collar or, in the case of a woman, dressing the hair. If the head of the radius is involved in the fracture, there may also be lack of pronation and supination. Sir Robert Jones lays down the following golden rule for the treatment of fractures of the elbow: "They should all be treated with the elbow fully flexed and the forearm supinated with the single exception of fracture of the olecranon, which requires full extension." The loss of flexion so dreaded may be due either to imperfect reduction or excessive callus formation. In a supracondylar fracture the lower fragment, as a rule, is displaced backward, the upper fragment is displaced forward in front of the lower and is a mechanical obstruction to full flexion unless the reduction of the fracture is complete (Fig. 2). Such a fracture is best reduced by partial flexion of the elbow to a right angle or more, then the exertion of firm, strong downward traction on this and manipulation of the lower fragment onto the upper. The latter part of such a reduction is greatly aided by complete flexion of the elbow with the forearm in supination. The strong tendon of the triceps muscle posteriorily and the coronoid process of the ulna with the attached muscles in front, steady the fragments in position.

For the subsequent treatment I quote again from Sir Robert Jones: "After three or four days, when absorption of the immediate exudates is well advanced and repair has begun, and when in particular the muscles have come to rest, the elbow need not be so acutely flexed, but the forearm should be slung by the wrist close under the chin. Between the second and third weeks, when bony union is fairly secure, the wrist may be dropped two or three inches, and the patient may practice active movements daily, producing full flexion and then allowing the arm to fall down to the limit allowed by the sling. If the movement can be satisfactorily performed, the sling can be lengthened every two or three days until a right angle is reached when it can be discarded altogether." The right angled splint so often seen need only be mentioned to be condemned. No splint is necessary in the treatment of fractures in the region of the elbow with the exception of those of the olecranon process of the ulna. With the elbow flexed and adhesive plaster placed around the arm and forearm, the position is very nicely maintained. If the fracture involves the condyles, thus being intra-articular, there is often a spreading, as it were, of the elbow. Manipulation and forcing of the joint into acute flexion will usually control the fragments as well as they can be controlled. If a piece of one of the fragments lodges in front of the joint and prevents flexion, an incision must be made and the obstructing piece removed. It is true that full motion will not be obtained by any method

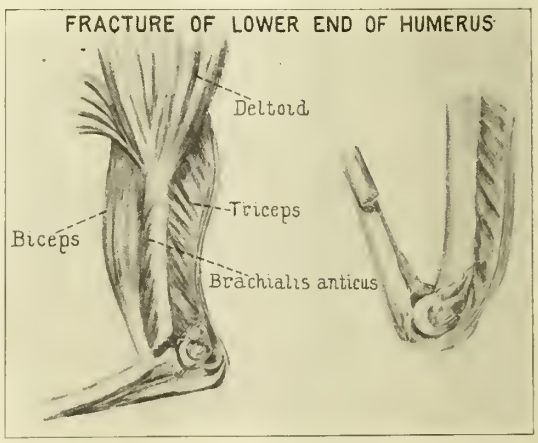

Fig. 2. Fracture of lower end of humerus.

in this intraarticular type of fracture, but satisfactory flexion will be secured. When the neck or head of the radius is fractured it may be necessary to remove the head, but not infrequently the fully flexed position with the hand in full supination will secure a very satisfactory result.

The Wrist Joint

It is not uncommon to see deformity and disability following a Colles' fracture. The dinner fork deformity causes pain, soreness and inability to grasp objects. This is almost always due to inefficient reduction. There are undoubtedly a certain number of Colles' fractures in which the force causing the impaction at the time of the accident is so great that a good deal of the cancellous bone is destroyed and the normal contour of the wrist cannot be restored. In such cases the aim must be to break up this impaction to such a degree that the normal line of the continuity may be restored as nearly as possible and the muscles permitted to pull in their normal axis. Even if there is considerable radial deflection because of loss of substance in the radius, function will be remarkably good if the fragments are in the same anteroposterior plane. In my experience the textbook plan of reduction by grasping the patient's hand and pulling is not in itself sufficient. The patient is seated in a chair and an assistant grasps firmly the patient's forearm which is held midway between pronation and supination. This leaves both hands of the surgeon free; he then grips the hand of the patient in the usual way and pulls firmly; as his other hand is free, he is able, by pressure with the thumb and forefinger on the fragments, to force them into line and to mould them in position. If the patient is seen immediately after the accident and before much swelling has occured, the sense of touch conveys the knowledge that reduction is complete. The patient usually volunteers that "it feels much better." If such relief is not experienced one should be guarded in any statement as to complete reduction. In certain cases, I have used the following method of Sir Robert Jones with happy results. "To reduce a left Colles' fracture the surgeon takes the patient's arm in his left hand, with his own scaphoid tubercle against the projecting lower end of the shaft; he then places his right hand on the dorsum of the patient's wrist with his own scaphoid on the projecting lower fragment. A firm grip with a slight traction and twist of the wrist completely reduces the deformity. It requires knack rather than strength." If reduction is complete almost any splint will hold the fragments. Early use of the fingers should be encouraged but the wrist should not be actively used for about four weeks.

Ischemic Paralysis

A consideration of deformities following fractures would be incomplete without mentioning ischemic paralysis, a fearful sequela too often caused by neglect. I have in a few instances seen ischemic paralysis in cases in which no splints had been applied. It is possible that a hemorrhage occured in these few instances and, held in by the strong fascia of the forearm, caused sufficient pressure to devitalize the muscles and nerves. The vast majority of the records state that the fracture was reduced and tight splints applied, and in spite of the agony of the patient and entreaties of relatives and friends for their removal, that they were left on and when finally removed irreparable damage had been done. If the pain following the reduction and splinting of a fracture is extreme, the splints should be loosened at once. Ischemic paralysis is occasionally seen in the lower extremity.

Non-Union

Just when delayed union becomes non-union cannot definitely be stated. Some authorities say that we should always speak of the condition as delayed union, but when it persists for from seven to eight, ten or fourteen years, it would almost seem that the term delayed union applied to such cases is a little farsical. Various conditions such as syphilis, poor blood supply, etc., are mentioned as being responsible for its presence. Inproper reduction and early rough handling to determine whether or not union is occuring are often responsible, but the chief cause for non-union is probably the interposition of muscle between the bone ends. In a considerable number of ununited fractures I have seen but one in which syphilis might have been the cause of non-union.

Fig. 3. Ununited fracture of the hip showing total absorption of the neck of the femur.

The Hip Joint

The large number of ununited fractures of the hip (Fig. 3) that are seen is chiefly owing to the fact that the fracture was not recognized and that no treatment was instituted because the condition was erroneously diagnosed sprain. In any injury to the hip, particularly in the aged, a radiograph should be made at once unless the symptoms are so classical that the diagnosis of a fracture of the neck can be made and the proper treatment carried out. Even then, it is much better for all concerned to insist on a radiograph. From the observation of a considerable number of these cases I am convinced that it is almost always better to break down the impaction and to reduce the fracture just as we do a Colles' fracture. The term impacted fracture, the degree of impaction being so difficult to determine in the radiograph, gives, I am sure, a feeling of false security. Undoubtedly many of these impactions break down later and nonunion results. With reduction accomplished, some means should be taken whereby it is maintained. Whitman's abduction method and the Ruth-Maxwell traction methods are both efficacious. Under proper conditions open operation is permissible and a beef-bone screw placed through the trochanter and neck and into the head insures proper position.

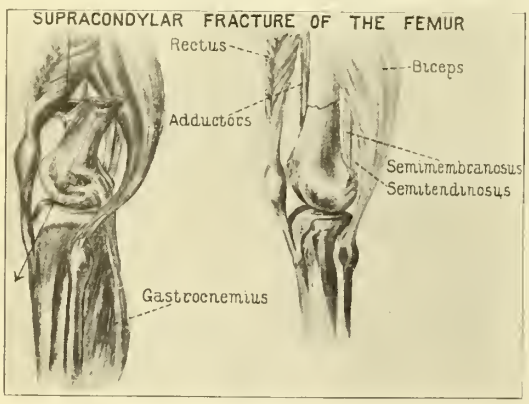

Fig. 4. Supracondylar fracture of the femur.

Fig. 5. Epiphyseal separation of lower end of femur with the epiphysis looking directly forward.

The Knee Joint

A supracondylar fracture or one in the lower one-fifth of the femur, so alters the line of weight-bearing in the knee as to cause serious disability (Fig. 4); this is caused by the posterior displacement of the lower fragment. While much is written concerning the efficacy of certain splints in the treatment of this type of fracture, if the separation of the fragments has been so extreme as to allow muscle to be interposed between the fragments, conservative measures are almost invariably fruitless. If proper surroundings and sufficient surgical skill can be obtained, such a fracture should be opened and the fragments coapted and held in place by whatever means is, in the judgment of

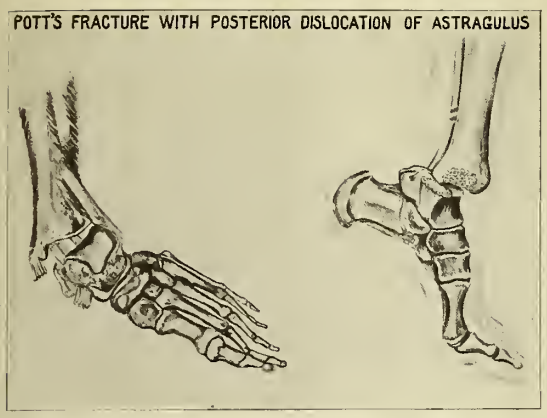

Fig. 6. Pott's fracture with posterior dislocation of astragulus.

the surgeon, correct, be it a metal plate, nails or bone graft. It is remarkable to what extent displacement of the fragments may occur with, comparatively speaking, slight external evidence, and indeed unless one is acquainted with such a fracture, the radiograph will be startling. This is especially true of separation of the epiphysis in children (Fig. 5), in which the condyles of the femur will be found on the anterior surface of the lower end of the shaft of the femur, with the articular surface looking directly forward. In the latter type it is generally necessary to expose the fragments by splitting the patella longitudinally, opening wide the knee capsule, splitting the posterior layer of the synovial sac at will, and by manipulation and prying to force the epiphysis back into place. The results are usually excellent with full function of the knee.

The Ankle Joint

Pott's fracture consists of a fracture of the fibula two or three inches above the tip of the external malleolus, the strong tibio-fibula ligament prevents fracturing any lower, and a tearing of the internal lateral ligament with occasionally part of the tip of the internal malleolus (Fig. 6). There is not infrequently a posterior displacement of the astragalus. There may be a break of the anterior lip of the lower articular surface of the tibia which is a troublesome complication. If the force has been quite severe the astragalus may be driven upward so that the external superior articular border acts as a wedge and crushes and forces up the external margin of the tibial articular surface, making, as it were, a groove for the astragalus to fit into and rendering reduction more difficult, with a resulting tendency for the deformity to recur. The common deformity seen after this fracture is marked eversion of the foot with the weight-bearing line falling to the inner side. The disability is great. Reduction should be complete and nothing short of this should be accepted. The foot should be held in slight inversion; the ankle should be dorsiflexed to at least a right angle, and care taken that the posterior displacement of the astragalus, sometimes present, is corrected. Weight-bearing, if too early ,may have serious results and should not be permitted under six weeks, for a good position may be lost through the giving way of a soft callus. The inner side of the sole of the shoe and heel should always be raised so that the foot will be placed in slight inversion, and held so for six weeks. For heavy people it is often wise to provide in addition an outside iron and inside T strap (Fig. 7).

Fig. 7. Brace to be used following Pott's fracture showing outside iron, inside T strap and raised inside sole.

Summary

Following a fracture in the region of the shoulder joint, the common disability is lack of abduction and external rotation; in the region of the elbow, lack of flexion, and in the region of the wrist there is the well known dinner-fork deformity with inability firmly to close the fingers. A fracture in the hip is prone not to unite unless adequate fixation is provided after the reduction. A supracondylar fracture of the lower end of the femur or an epiphyseal separation interferes with the proper transmission of weight through the joint surfaces and limits flexion and extension. Pott's fracture is the common fracture of the ankle and not infrequently causes disability by the valgus produced by poor alignment for weight bearing.

If the type of deformity that is apt to follow the particular fracture being dealt with is kept in mind, and if it is recognized that the deformity is potential, better results will undoubtedly be obtained by so vigorously directing the treatment as to guard against poor alignment of the fracture.

THE RELATION OF PHYSICIAN AND DENTIST IN THE TREATMENT AND PREVENTION OF DISEASE DUE TO DENTAL FOCAL INFECTION.*

Henry B. Clark, Exodontist
St. Paul, Minn.

About eighty years ago Hayden and Harris established in Baltimore the first dental college. Before establishing this school they had gone to the Medical College and asked for permission to establish a dental branch there; this permission was refused. The result has been, dentistry has largely gone her own way, and has drifted far away from what really is the parent profession.

American dentistry, in this drifting, has surpassed the world, in perfection of mechanical treatment of mouth lesions, but she has, at the same time, acquired a pathology which really amounts to little or nothing.

Who is responsible for the dental pathology of today, or its lack? I will answer that question by asking another. Who are the teachers of pathology in dental colleges today? You know they are, almost without exception, men who write the M. D. after their names. Why have they failed to give us a correct and adequate pathology? A pathology which would not, at this time, require a complete revision? Are dental students lacking in mentality, as compared with medical students? I think not; I think whether a man writes M. D. after his name or D. D. S. has very little to do with the scope of his mentality.

Have we not been given good teachers on pathology? I say we have the best of men as teachers of pathology in our dental schools. The reason then, that pathology has not kept pace with other advances in dentistry is probably due to the separation of the professions. Teacher, student and practitioner have come to look upon the mouth as "primary territory apart from the rest of the body."

Mouth pathology is pathology just as much as is pathology of any other part of the body, and when this becomes clearly fixed in the minds of medical and dental men, it is going to be a help in clearing up some of our mutual problems.

Now the time has come when it has been proven that such an appalling array of human ills are being caused by mouth infections, that we as physicians and dentists, must get together and agree upon the pathology of dental infections.

Investigators in the field of focal infections, are very soon led into the dental field. Rosenow, in what I believe is his latest article says:

"Much of the experimental work I have done has a direct bearing on the problems which confront the dentist in his every-day practice."

And nearly all other investigators, as they begin to see the effects of dental infections upon the health of the physician's patient, immediately express wonder that so little has been done jointly. As Ulrich says:

"It is amazing how little the dentist acts as a guide to correct this systemic suffering, and how little the doctor calls in the dental surgeon."

*Presented before a Joint Meeting of the Ramsey County Medical Society and the St. Paul District Dental Society, March 25, 1918.

The reason for this, however, is not hard to find, and is possibly best expressed by another quotation from the same man when he says:

"The far-reaching effect of mouth infections are as little understood by the average dentist, as are these infections appreciated by the average doctor."

But he goes further to say:

"Truly the day is passed when the dentist can hide behind the whir of his drill, and the physician sit tight between doses of salicylates."

To talk about dental infections, I want to draw a picture and review the histology of a tooth. A tooth, as you know, is composed of four histologic elements: the enamel, with which we need have little concern; the dentine; the pulp; and, last, and possibly of greatest importance, from the stand-point of focal infection, the cementum. The pulp is, of course, the soft tissue part, which, when inflamed, necessitates devitalization.

When a pulp becomes inflamed and infected, if left alone it strangulates and becomes a mass of dead tissue.

The main body of the tooth is composed of dentine. From the pulp, all through the dentine, radiate minute, hollow tubules, filled with a protoplasmic fluid; these are the dentinal tubules.

When a pulp dies, or is destroyed, the content of these tubules remains as dead matter, regardless of whether the pulp canal is cleansed and filled, or not. Here is menace number one of a dead tooth.

The dentine of the root is covered by a thin layer of cementum. Cementum is a passive tissue. There is no other tissue like it in the body. It has some characteristics in common with bone, but while bone has circulation and the power of repair within itself, cementum has not. It derives its nutriment entirely from the peridental membrane, which, in comparing it with bone, stands in the same relation to the cementum as does the periosteum to bone. When, for any reason, the peridental tissue is detached from the cementum, that cementum has lost its vitality, and it never will regain it.

The peridental fibre, once detached from the cementum, never re-attaches, and where it has been detached, there remains a particle of dead tissue in contact with the living tissue.

If you have a pyorhea pocket at the side of a root, the tooth wall of that pocket is dead cementum. If you have an apical abscess, whatever portion of the root of the tooth that protrudes into that abscess, is covered with dead cementum.

If a pulp dies in a tooth, there is more or less of a destruction of peridental fibres where the pulp enters the apex of the root.

It is impossible to artificially destroy a pulp, and fill a root canal, without causing enough disturbance at the apex of the tooth to destroy some of the peridental fibres and leave some dead cementum covering its apex.

What is bound to be the result of having this dead tissue buried there? It becomes a lodging place for bacteira which may be floating in the blood stream, which are saphoritic in nature. It has been demonstrated, and cannot be successfully contradicted, that all devitalized teeth, after a few months, have lodged and growing in these places, saprophytic bacteria; almost always a variety of streptococci.

Well, they seem to be doing no harm; they cause no trouble; they do not give the patient tooth-ache; they do not form pus. Why not let them remain?

Rosenow says, and is quoted by Ulrich:

"It would seem, therefore, that focal infections are no longer to be looked upon merely as a place of entrance of bacteria, but as a place where conditions are favorable for them to acquire the properties which give them a wide range of affinities for various structures."

They are like an army becoming acclimated in a new climate. They take up their home there, and get ready for an attack; and when they do attack they are the most virulent kind of bacteria our bodies have to contend with because they have become so well acclimated. The fact that bacteria which have been growing in human tissues are most virulent, is well demonstrated by the fact that if, while doing a post-mortem or dissection, a cut is received, which plants infection from the dead body into the living, that infection is most virulent; and we know that one of the most dangerous cuts one can get is one

with a knife which has just passed through tainted meat.

Another most interesting and important fact regarding bacteria allowed to grow in the tissues a long time, which has been beautifully demonstrated by Rosenow, is the peculiar selective quality which those bacteria acquire. You probably all know of Rosenow's experiments: how he will take bacteria from an ulcer of the stomach, from a heart lesion, or from a dying pulp. By injecting any of these particular cultures into rabbits, guinea pigs, cats or dogs, he produces, with surprising regularity, the same thing in the animal. To illustrate, I will quote briefly from case No. 52 of Rosenow's experiments, this being a case of ulcer of the stomach. Regarding the experiments on animals, he says, in part:

"In the first culture the streptococci from the tooth was injected into four animals and all but one showed hemorrhage or ulcer of the stomach."

And, "Case No. 205.—Acute appendicitis in a man, 27 years old. There was no history of a sore throat . . . In the animal experiments the intraveneous injection of the streptococcus in ascites dextrose broth from the tonsils and tooth, and from the peritoneal coat . . . produced hemorrhages in all but one of seven rabbits."

Which goes to show that if we allow these bacteria to grow in the tissues, they do acquire a peculiar selective quality and power over certain tissues, which makes them very hard indeed to combat.

Of what use to us is the X-ray, in treating focal infections in the mouth? X-rays are useful to locate dead teeth, pyrrohea pockets, impactions, and to show the extent of cysts and of bone destruction. No one can say, however, by looking at an X-ray picture of a tooth, that that tooth positively is not a menace to its possessor. The dentist or physician looking at an X-ray picture of a devitalized tooth, and expressing an opinion that that tooth is, or is not, a menace, is merely guessing, because there is at the apex of any devitalized tooth an area of lowered resistance which is sure to harbor bacteria, but which will not necessarily cause any destruction which will be evidenced on the film.

What then is to be done with devitalized teeth? Devitalization of teeth has got to stop. When patients are suffering from the effects of focal infection, devitalized teeth must be extracted. They should be extracted before the removal of tonsils, because they drain toward the tonsils, and infected tonsils will often clear up when devitalized teeth are removed.

"The means of protecting the general health, from the secondary effects of dental focal infections, are simple. Success depends upon a full understanding of the situation by both physician and dentist, together with the education of our people to the danger from the primary focus, the insidious progress of the secondary effect, and the intractableness of the secondary effect to treatment

"The dentist should apply treatment on the basis of a careful diagnosis, and his knowledge of the danger to the person who apparently is in perfect health."

"It is unquestionably true that damage, and severe damage is done by stirring up focal infections in persons, apparently in perfect health, when this danger is not forseen and guarded against. When this is done:"

"This is preventative practice in the highest degree. Eradication of mouth foci should not be delayed until secondary effects have become manifest. Every dentist, who has a full appreciation of the situation, will realize that, in the management of cases, he is doing his highest duty to humanity in the preservation of health, by keeping the mouths under his care, free from these centers of distribution of infection."—(G. V. Black.)

The idea that teeth must no longer be devitalized, and that all devitalized teeth must be extracted, is so revolutionary, and this pathology is so different from what we have been taught, that the unthinking man refuses to accept it. I believe, however, that anyone who has studied this thing carefully, can convince any fair-minded man inside of an hour, that it is correct.

Some dentists feel that this is going to rob them of their business, but that is not true. The dentist who will put these failures behind him and strike out and do modern dentistry, will have more work than ever, and he will

be doing good and rendering real service to humanity, instead of doing harm.

Malpractice may be done in removing teeth which ought not to be removed, but greater malpractice has been and will continue to be done, in leaving in teeth which ought to be out. Every devitalized tooth, in a very few months after devitalization, becomes a positive or potential streptococci incubator, and, naturally, a menace to its possessor. It is only carelessness and cowardice on the part of our patients, which makes devitalization necessary. When patients know they cannot have nerves killed, but will be obliged to have the tooth extracted in which they allow the pulp to become exposed, they will come to the dentist in time to avoid exposure and extraction.

Bridge attachments are being successfully made to vital teeth, and as we become more proficient in this class of work, these attachments will be made more successfully than at present.

Nerve blocking, by means of novocaine anesthesia, renders this thing practicable, under careful hands, for the most sensitive tooth in the mouth of the most nervous patient.

Those who are financially unable to afford the above mentioned class of work, will do better with dentures, partial or full, than they will with the horrible three-dollar-a-tooth bridge work that so many of them accumulate under the present way of doing things.

As soon as we unite on this pathology, and people learn that if they let their teeth go until the pulp is exposed it means extraction, they will not let them go until the pulp is exposed. The dentist will get away from that nerve-racking, eye-straining, life-shortening root canal work, to the betterment of his own health, the lengthening of his own life and the betterment of the health, and the lengthening of the lives of his patients.

Having freely quoted from the writings of the following men in preparing this paper, I wish to express my deep appreciation of the privilege of so doing and acknowledge the debt we all owe them and others who have worked on this problem: Black, Gilmer, Rosenow, Kremmer, Ulrich, Billings.

DISCUSSION

DR. E. T. F. RICHARDS, St. Paul: Mr. Chairman, Members of the Medical Society, Members of the St. Paul Dental Society: I wish first to congratulate Dr. Clark and Dr. Earl on these two very excellent papers and to congratulate Dr. Grove on the most interesting microscopic pictures.

The question brought up tonight opens up a great many points for consideration. The term "oral sepsis" is one which is very old, dating back a great many years. In those days, of course, nothing apparently was known about the roots of the teeth. (From that time, we have advanced to the point where we now consider the pulp of the teeth, the peri-apical tissues down to that of the stubborn and almost incurable pyorrhea.) With regard to the question of the latter, there does seem to be quite a difference of opinion amongst the dentists as to its curability and I had hoped that tonight that question would be brought up, but it probably will be further in the discussion. As to the question of whether pyorrhea can finally be cured, I rather understand that the feeling is that that is not true; that a patient with pyorrhea should be made to report to his dentist at successive intervals in order that the gums may be thoroughly cleaned and kept in shape.

We are all convinced that areas of infection wherever they may be have to be eradicated. If we are to be able to handle a case intelligently, it may be only a case of fatigue or it may take the form of muscular pains or arthritis (it of course may be one of a host of things); in such a case the diagnosis is not complete until we have put our finger on the source of infection; so that it has come to the point where the medical men are tremendously interested in the care of the mouth and in their routine of examination they should carefully go into the matter of the teeth and the gums just as they do that of the tonsils, and we need the backing of the dentist in this work.

There is one point which is very important and which Dr. Earl has already brought out and that is the association of several foci of infection. At the University Hospital, we have kept track of a large number of cases that have been attacked from this point of view and we have found that very rarely have we found any one focus. In practically every case, speaking rather from memory than exactly, we find other areas of infection; that is, we find what we take to be peri-apical abscesses; with that we see frequently pyorrhea, tonsilitis or it may be a chronic sinus infection; so that in medicine we feel that nearly always we are dealing with one more focus of infection and that the tendency to get to a certain focus probably explains the absence of results in a good many cases.

The work of searching for foci is very painstaking and is well worth while when it comes to conditions such as arthritis, etc., so when we do not get results we feel that we have overlooked something. The results naturally vary, very widely, and that is true of any therapeutic agent. We cannot assure the patient before hand that we are going to get results and our attitude is to be that of being uncertain before hand

as to what really will result from the removal of the infected areas. The patient has to be told whether or not there are infected areas. There is no way, today, of knowing before hand what the result is going to be; whether it is going to be an improvement or not. The point is this, that we are not justified in leaving the areas which we are certain are infected; we must urge their removal.

Diagnosis from the radiogram is certainly at times most difficult, and it would seem from the remarks made this evening, and I feel the same way, that given a tooth with a dead pulp and one which we are certain has been dead for a number of years, that whether or not the X-ray is positive, we must advise the complete removal of that tooth. We have to act largely on the question of the dead pulp; the dentist at once can detect that, and on that basis, we advise the extraction of those roots.

There is another point, that in a very sick individual, particularly one with an acute arthritis, there is great risk in extracting two or more teeth at one sitting. In a very sick individual, the teeth should be gone after very cautiously. If there are several to be removed only one should be removed the first time and then let elapse a period of a week or two before the second one is removed. If that rule is not followed, we will see bad results. In the prevention of this problem, Dr. Clark has made a very interesting suggestion that the teeth be not devitalized. The dentists will have to thrash out this matter at some time and the sooner they do it, the better it will be for the medical profession.

THYROID DEFICIENCY

The Iodine Requirement During Pregnancy.

By G. Ennis Smith.
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Among the so-called ductless glands, whose external secretions assist in some profound manner the special activities of various organs and tissue, the thyroid holds the position of chief importance because not only has a definite relationship been established between it and certain pathological conditions and normal metabolic processes but also certain peculiarly human characteristics depend upon its normal function. If its function should fail during infancy longitudinal and mental development are arrested resulting in a species of idiocy known as mongolian cretinism, or if during adult life, among other derangements, mental deterioration sets in, sometimes leading to a definite insanity; thus the thyroid can be considered a "par excellence" human organ.

The physiologically active constituent of the thyroid is an iodine compound and to insure its normal secretion it is necessary that the blood which circulates through the thyroid should contain a sufficient amount of iodine to maintain the secretion and an abundant reserve. If there is not sufficient iodine, under certain conditions, the thyroid is prone to enlarge.

A new aspect of the part that the thyroid performs in the history of the individual has been revealed by a study of a malady that is prevalent among new born domestic animals in the Northwest sections of this continent including Minnesota, where the young are born hairless and dead or die in a few hours. In an investigation carried out in connection with the University of Montana the writer demonstrated that the disastrous effects of the malady resulted from a lack of function of the fetal thyroid due to a deficiency of iodine in the mother's diet and also that the malady could be eliminated by feeding iodides to the pregnant animals. The thyroids of the affected animals are ten times the normal size and are exhausted of the principal physiologically active constituent. When iodides are fed to the pregnant animals the young are strong and vigorous and their thyroids invariably are the normal size and contain an abundant store of the active constituent.

Goitre is very prevalent among the human inhabitants of certain well known regions of Europe and Asia and numerous contentions have been brought forward to account for its prevalence. Investigators now maintain that the limiting factor is the same as found by the writer in the thyroid disturbance of new born domestic animals; that goiter is prevalent in those regions where there is an iodine deficiency in the vegetation. While the general food of the human inhabitants of any section of this continent is not restricted to the products of that section as is common with domestic animals and with the humble inhabitants of many regions of Europe and therefore Americans would not be so susceptible to an iodine deficiency in their environment, yet the alarming prevalence of goiter on this continent indicates that there is a wide sus-

ceptibility to goiter. It is also common knowledge that the thyroid is prone to enlarge during menstruation in young people during ages of twelve between puberty and pregnancy, indicating that there is an increased thyroid activity and that there is often not sufficient iodine in the blood and diet to maintain the required increased secretion.

Examination of a large number of agricultural products of this continent has shown that iodine is absent in the great majority and when it is present there is only a trace. The observations of the writer have led him to assert that during those periods in the life history of the individual when the thyroid performs an increased activity, that is during the fetal growth, puberty and pregnancy, the amount of available iodine in the ordinary diets is near to and very often below the border line of minimum amount required to sustain the increased activity of the thyroid and in order to insure a normal development during those periods and to ward off pathological conditions it is advisable to supplement the ordinary diet with a certain amount of iodine.

One grain of potassium iodide or 1–35 of an ounce of syrup ferrous iodide, U. S. P., taken approximately daily during pregnancy and menstruation and for a period of seven days each month during puberty would be sufficient to meet all the iodine requirement of the thyroid.

THE CONTROL OF VENEREAL DISEASES

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Three diseases are classified as Venereal Diseases: Syphilis (lues), an infectious disease beginning in a local sore and thence spreading, if unchecked, and invading the entire human organism; Gonorrhea, an infectious disease, characterized by a discharge from the genital organs, and thence affecting the reproductive organs of both the male and female; Chancroid, an infectious ulcer of the genitals, local in its course, not invading the general system, comparatively easily controlled and not of great importance. The two former, gonorrhea and syphilis, are, therefore the two which are to be considered from a public health standpoint.

The control of venereal disease would be a comparatively simple sanitary problem if they could be handled like other infectious diseases. We have all the facts at hand necessary to their sanitary control. We know that they are infectious, we know their causes, their incubation period, their mode of transmission, their duration; and we have adequate means of treatment. If we had in addition, control over the liberty of each individual inhabitant of this great land of ours, we could absolutely eradicate all infectious disease including the venereal diseases. But venereal disease control is not a simple sanitary problem. There is no practical way by which venereal patients can be isolated like diphtheria or smallpox patients. These latter diseases run a definite short course, during which the patient can easily be isolated. The quarantining of venereal cases would mean a quarantine from three months to three years—an obviously impracticable procedure. Public sentiment at this day would not support quarantine measures because of the secrecy which custom has surrounded this subject. The venereal diseases involve factors not concerned in ordinary infectious diseases—social, moral and personal factors that reach into the most impulsive actions of life. Thus we must admit that owing to its complexity, its extremely personal touch, and the fact that innovation is prone to meet with distrust, the problem of venereal disease control is a most difficult one. There is the utmost need for tact, judgment, tolerance and sympathy, even in discussing the question and much more so in its practical administration.

The Prevalence of Venereal Disease. Owing to the fact that very few states make these diseases reportable, and that even in those states which make them reportable, the enforcement of the reporting is extremely difficult (because public sentiment clings to the idea of secrecy regarding them) accurate figures as to their prevalence are unobtainable. Fournier estimates that in Paris 15 to 18 per cent of women, and 21 to 28 per cent of men are syphilized. The estimate based on the

best figures obtainable is 12 per cent for London, England. The U. S. Public Health Service considering a million hospital patients, records dating back thirty years, estimates 8 per cent syphilis. This figure is, of course, far too low. Figures compiled from the examinations held in the operation of the selective service law in mobilizing the National Army show 20 per cent syphilis. During the recent mobilization in September ,1917, the venereal rate in the army was 367 per thousand, or over 36 per cent. Gonorrhea is endemic in all the large cities of the United States. In 1901 an estimate was made in New York City showing 162,366 cases of venereal disease. There were 15,969 cases of gonorrhea actually reported, 1,941 of whom were women and 488 children. These figures are for one year only. Forscheimer estimates that 51 per cent of the adult male population has had gonorrhea.

It is estimated that 15 per cent of the admissions to our state hospitals for the insane are due to syphilis. A census of the insane hospitals in the State of New York made in 1917 disclosed 1,370 cases of paresis, 122 cases of tables dorsalis, both diseases due directly to syphilis. Estimating the cost of maintainance of patients of this type to the state, and the resulting loss of earnings from their incapacity, the apalling figure of $5,398,644.00 was reached. The financial loss connected with these diseases is something appalling and affects every taxpayer, yes, even every citizen of the country, and the money spent for their prevention today could be multiplied ten times and would yield large savings in the insane hospitals alone. If you consider that the campaign of education and prevention in the United States Army has reduced the rate fifty per cent one can see what a saving an equal reduction might mean in this state alone.

Admitting the widespread prevalence of of these diseases, if they were restricted to those only who by their own conduct and immorality contracted the disease, we might hold up our hands with the rigid moralist who insists that these diseases are a just visitation of Providence and shall be the horrible example to deter others from vice, *but* how about the innocent? Gonorrhea is responsible for 30 per cent of all blindness, and 80 per cent of all blindness in children under 2 years of age. One third of the gonorrhea in women occurs in married women innocently infected by their husbands. Gynecologists say that 80 per cent of laporotomies for pelvic disease are the result of gonorrhea. The fact that the innocent suffer with the guilty and often their plight is far worse than that of the guilty, and that this state of affairs threatens the whole public health, makes this question one of sanitary control and prevention rather than one of morals. Nothing that may be said need make us forget the moral aspect and its importance. The control of these diseases, their limitation to a negligible per cent of the population, if possible, will not affect our ability to handle the moral problem. Gradually all authorities are adopting the point of view of dealing with this question as a sanitary and public health problem. We must by all means avoid being carried away by extremes in either direction.

Methods of prevention may be grouped as follows:

1. Education in regard to sexual hygiene and venereal disease.
2. Social measures.
3. Medical and hospital care.

1. **Education.** The term education is often very loosely used to mean instruction or the presentation of facts. This is not all there is to education, which in its broader aspects should include the leading of the mind into proper habits of thought and a right outlook upon the problems of life. Education must aim at developing the self control necessary to keep in check the sexual instinct, and inculcate into the individual sound principles of social morality. Education on these lines is a process which must be begun early in life as a foundation on which to base a knowledge of this subject. It is obvious that the first steps in this direction should be taken by the parents, if possible; then later on in school and college the elementary facts of biology should be taught in a scientific way. From this point it is only a step to the teaching of the facts of the social diseases. Then careful instruction can be provided in regard to moral conduct and the sexual relation, such instruction to be based on moral principles and not on the consequences of immoral conduct.

2. **Social Measures.** These may be divided into two groups:

First; the provision of proper social surroundings and of opportunities for recreation and diversion. If promiscuity in sexual relations could be abolished, venereal diseases would soon dwindle to an unimportant place. The sexual instinct is, however, a very strong one. If we were living in a social millenium, every individual upon maturity would be able to satisfy this instinct by suitable mating, but under the present economic conditions this is impossible. In consequence, the great majority of men and women are, for a long time, compelled either to subdue their natural passions or to gratify it by casual intercourse. This is an unfortunate economic condition and is to be remedied by the striving to secure for all a just wage and equal opportunities. It should be made easier for the average man to achieve the economic independence necessary to marriage.

For the social worker there is a vast field in combating the many evils which stimulate sexual immorality. (1) Living in cheerless rooms without proper windows and sunlight. (2) Lack of bathing facilities. (3) Lack of ventilation of sleeping rooms. (4) Unsanitary school conditions. (5) Employment out of school hours. (6) Insufficiency and insuitability of food. (7) Injurious sleeping arrangements. (8) Want of cleanliness. All of these things have a bearing either directly or indirectly on the prevalence of venereal disease. In the recent mobilization of troops, the United States Government has set an example to the nation in its establishment of canteens, social clubs, liberty theatres, etc., for the soldier in camp as well as on leave. The municipalities must follow the lead and establish community centers of recreation so that old as well as young can amuse themselves in proper surroundings.

Second; repression of prostitution and the liquor traffic.

It is unnecessary to dwell on this subject because the nation already stands committed on the policy of repression of prostitution and has taken recently a long step towards the abolishment of the liquor traffic. Let us hope that by the time the nation "goes dry," most distilleries and breweries will be so busy making other products that the illicit liquor business will hold out no great temptation for them.

3. **Medical and Hospital Care:**

First; the suppression of charlatans. Heretofore the venereal patient has been the easy mark for the charlatan. The quack considered him his legitimate prey. The only reason for the existence of these charlatans was the demand for secrecy on the part of the general public. They thrived on the ignorance of the poor unfortunate and the veiled insinuation of his shame. In the years past, the young man who was so unfortunate as to contract a venereal disease, considered that he was disgraced. There was no one in whom he could confide, no place where he might secure information, and naturally large numbers, in their ignorance, drifted into the hands of charlatans, only to get the poorest sort of treatment.

Another widespread evil is the charlatanism as practised by some unscrupulous druggists, who prescribe for these diseases. I dare say that today fifty per cent of venereal patients consult either some druggist, a friend with a sure cure prescription, or use some advertised nostrum. The money thus unwisely spent is of no consequence, but the time thus wasted in self treatment is most precious. We all realize the need of early diagnosis and treatment in tuberculosis and cancer. The need for early diagnosis and competent treatment in venereal cases is equally great to the patient and of far greater importance when we consider the public health.

Second; in order to protect the public as well as the patient, we must go further than to suppress the charlatan and the irregular practitioner. We must supply every patient with the opportunity of adequate treatment. A start has been made in this state by the establishment of three clinics for the exclusive treatment of venereal diseases. One in Minneapolis, which has an average attendance of 50 patients; one in St. Paul which treats an average of 25 at each session; and one in Duluth, which averages an attendance of 30. These dispensaries, under the control of the state board of health, furnish free treatment.

As a further aid, the state board of health furnishes free laboratory service for the diagnosis of both gonorrhea and syphilis, as well

as making the Wasserman test. This gives the physicians of the state a better opportunity to make accurate diagnosis and give better treatment.

Certainly we must admit that this is making it easy for the patient to secure treatment. We must go one step further. That is, we must see to it that every patient not only takes the treatment offered but sticks to it at least until he is rendered non-infectious. By a system of reporting and numbering, the state board of health is endeavoring to secure some kind of control, and at the present time a patient who discontinues treatment while still infectious may be reported to the state board of health which has the power to cause his detention in a hospital until cured. So far this procedure has been applied only in these refractory cases where the patient has a record for incorrigibility. This class is what we may term **carriers,** and includes prostitutes, both commercial and clandestine, prisoners and inmates of institutions. These people are naturally irresponsible, and if infected are a positive source of danger to the community if they are allowed at liberty. They must be restrained until they are rendered non-infectious.

There is a great opportunity for the medical profession to educate the public to the necessity of early diagnosis and immediate vigorous treatment in venereal disease. This has been done in tuberculosis and now more and more people are demanding to know of the doctor whether that cough is tuberculosis so that they can get early treatment and take the proper precautions. The same principle of early diagnosis and treatment apply to venereal disease, and when people generally understand the situation, they will demand adequate treatment, not only for themselves, but for the entire community.

Preparedness on the part of the medical profession consists of—

1. Correct reporting of the disease.
2. Urging patients to secure early diagnosis.
3. Giving them competent and adequate treatment.
4. Knowing the facts, so that when the laity come to us for advice and instruction in sex hygiene we are able to give them scientific information and correct instruction.

THE TRANS-RECTUS INCISION IN THE UPPER ABDOMEN.*

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The proper performance of an intra-abdominal operation demands an incision through the abdominal wall of sufficient length to allow the surgeon, in so far as it is possible, to do his work unhampered by the interference of the abdominal parietes. During recent years long incisions have been made with less hesitancy and with a corresponding improvement in surgical therapy. Nevertheless, every effort should be made to conserve the abdominal parietes to an extent commensurate with the handling of the intra-abdominal problem. It may be true that under absolute asepsis rather long incisions heal as rapidly as do short ones, but this ideal does not always obtain. In any event, the conditions which tend to produce incisional hernia are favored by the long scar; also, the forces acting are, in a measure, proportionate to the length of the scar. When pathological conditions demand long incisions, the injury to the abdominal wall becomes at once of relatively minor import. Long incisions may even be indicated in order to arrive at a diagnosis in some cases, but too often this is evidence of failure on the part of the surgeon to complete his differential diagnosis before operation.

In a former contribution[1] on this subject I stated: "When work in both the upper and lower abdomen is called for in the same patient, it may be a mistake to prolong an incision from one to the other field, especially the pararectal incision. Perhaps it is better to make a second incision in those cases. The slight loss of time will be compensated by decreased trauma from forceful manipulation and by allowing more thorough work, besides the avoidance of severing the nerves and its ill effects." Additional experience of the past six years affords no reason to change the previously expressed opinion.

Certain usages have become established regarding the direction of incisions, structures to be conserved, etc. I wish to consider the

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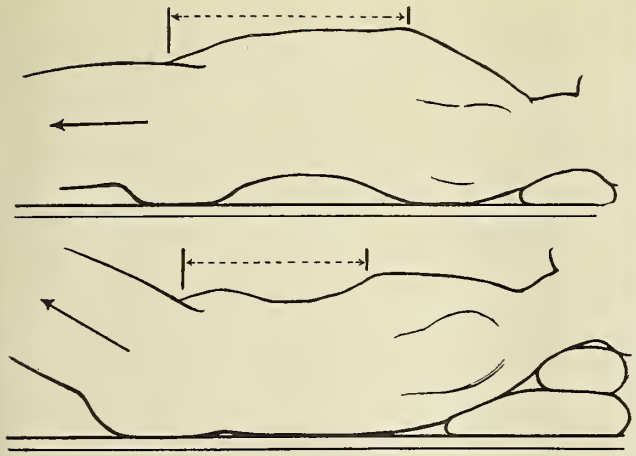

Fig. 1.

Showing how the distance between the pubes and ensiform may be shortened, thus relaxing the abdominal wall and relieving the transverse incision from tension.

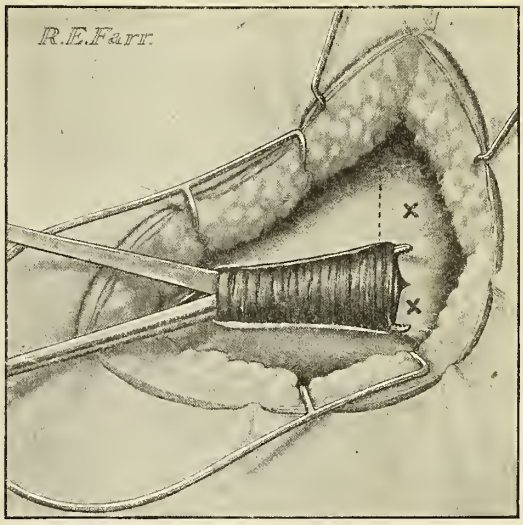

Fig. 2.

Gall Bladder Incision. Anterior aponeurosis of rectus incised. Curved forceps separating rectus from posterior sheath. Dotted line shows position of vertical limb of the incision. X marks position of *linea alba.*

following points: (1) the appearance of the resultant scar; (2) the relative importance of the division of muscular as compared with aponeurotic tissue; (3) conservation of the blood supply; (4) conservation of the nerve supply; (5) anticipated pathology; (6) the facility with which the incision may be made and closed; and (7) the relaxation afforded during operation, and after operation.

1. **The resultant scar.** While the appearance of an abdominal scar is relatively unimportant, it is desirable that any incision be placed so that the scar will be as sightly as possible. It does make a difference. Incisions along Langer's lines result in the sightliest scars.

2. **Relative importance of the division of the muscular as compared with aponeurotic tissue.** Without going minutely into the question of the dynamics of the abdominal wall, we may consider certain points in this connection. Though the lateral pull on the abdominal wall may not be greater than the vertical, vertical tension is easily reduced by decreasing the distance between the ensiform cartilage and the pubes (Fig. 1). There is no way in which the lateral tension can be so diminished. The relative merits of muscular and aponeurotic tissues as supporting structures are still *sub judice.* A study of the structures of the abdominal wall shows that the bundles of fibers of aponeurotic tissue to a large extent lie transversely. It is a well known fact that, even with marked diastasis of the rectus muscle, hernia does not occur without a separation of the aponeurotic fibers. Inasmuch as the aponeurotic tissue of the abdominal wall runs in a general transverse direction and as lateral tension, which cannot be readily overcome, is apparently greater than the vertical, it would appear that Kocher's[2] dictum that the rectus muscle is the least important structure of the abdominal wall may be correct.

Two main objections are made to the division of the rectus muscle: (1) it is said that it retracts between the anterior and posterior sheaths and cannot be reunited unless some method is used to prevent this retraction; and, (2) objection is also made that the hemorrhage is troublesome and is somewhat hard to control as it comes directly from the cut surfaces of the muscle. Perthes[3] has advised the introduction of sutures on either side of the proposed incision, and it is not unusual to see those who employ this incision delay approximately ten minutes for the introduction of these sutures. From my observation I must conclude that the procedure of suturing the rectus muscle to its sheath for the purpose of preventing its retraction is entirely unnecessary, though for the purpose of hemostasis it may be desirable. For many years I have ob-

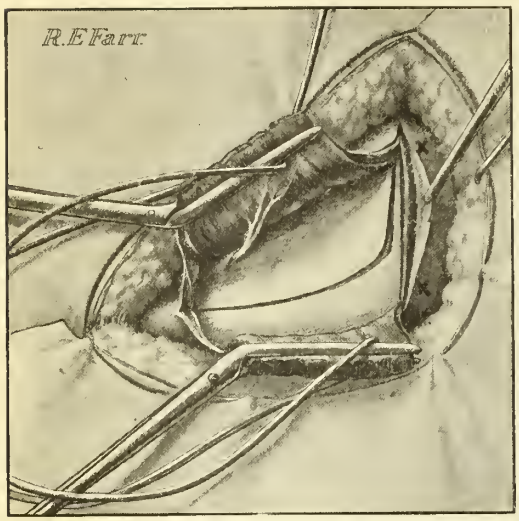

Fig. 3.

Rectus muscle divided between two pairs of angular Pean forceps. Note direction of incision of posterior sheath. Note tenth thoracic nerve appearing in the field. X marks position of *linea alba.*

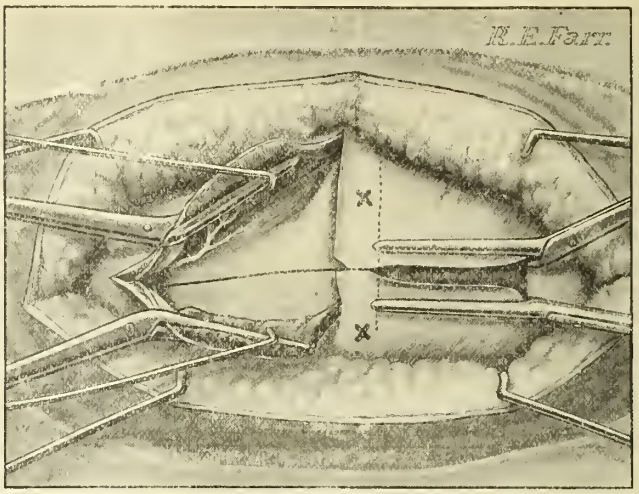

Fig. 4.

Gall Bladder Incision to the left. Stomach and Spleen Incision to right. Note.—Either may be converted into incision shown in Fig. 6. Hemorrhage guarded against by the application of clamps. X marks position of *linea alba.*

served the so-called retraction of the rectus muscle with the following results:

When the incision strikes a *linea transversre*, there is no retraction. In most instances the cut edges of the aponeurosis do not lie as near together as do the cut edges of a muscle. If the incision goes through the red muscle it is followed by some retraction, the degree dependent upon the distance of the incision from a *linea transversae*. The end nearest the *linea transversae* will show a plus amount of muscle projecting beyond the aponeurosis; the end farthest away may show a muscular retraction within the sheath, but in every case observed thus far there was a positive amount of muscle beyond the edge of the aponeurosis; that is, the ends of the muscle were closer together than were the edges of the aponeurosis. In all cases examined, a proper closure of the sheaths of the rectus (aponeurosis) has resulted in an intimate contact of the divided ends of the muscle.

3. **Conservation of the blood supply.** In the presence of a sufficiently free anastomosis, the division of the blood vessels is relativcly unimportant. Even with division of the main blood supply, incisions through extremely vascular areas heal with great rapidity. This is well illustrated in work about the face, and clinical experience goes to show that the deep epigastric and inferior mammary arteries may be divided with impunity.

4. **Conservation of the nerve supply.** The abdominal wall is supplied by the lower thoracic nerves which travel obliquely downward and forward at the sides but enter the rectus muscle as large bundles in a transverse direction, when they begin to subdivide into fine branches (Fig. 3). Unless made with extreme care the pararectal incision must destroy one or more of these nerves which are regarded by many authorities as the most important structures in the abdominal wall. Atrophy unquestionably results when any considerable area of the abdominal wall is deprived of its nerve supply. I have observed numerous instances of weakness of the abdominal wall subsequent to the long pararectal incision. The researches of Quain[4] would indicate that visceroparital adhesions are more prone to develop in cases in which the nerves of the abdominal wall have been divided.

5. **Anticipated pathology.** Above the navel the transverse incision offers the most adequate exposure of the various pathologic conditions. The gall bladder, stomach, and even the appendix if not adherent in the pelvis, can be readily dealt with. In most instances retraction of the abdominal wall, both upward and downward, is possible so that good exposure is usually obtained. By supplementing this in-

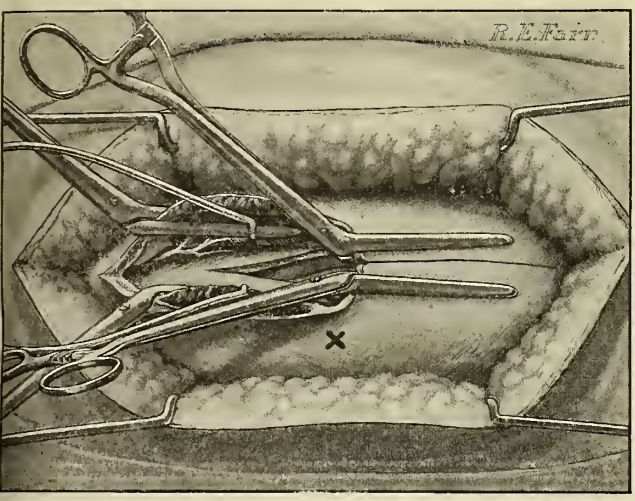

Fig. 5.
Shows technic of making the Transrectus Incision across both muscles. X marks position of *linea alba*.

cision with the near-midline vertical incision when necessary, one is afforded perhaps the most ideal exposure it is possible to obtain. In the matter of choosing incisions, a great deal can be done by varying the size and direction according to the pathology anticipated.

6. **Facility with which incision may be made and closed.** All authorities agree that it requires more time to enter the abdomen by the transverse route. This is especially noted when Perthes' method of muscle-suture is employed or if the bleeding vessels in the severed muscles are clamped individually. With the method to be illustrated presently, however, the element of time is negligible. In closing, the procedure is relatively simple. We have to deal with two layers of aponeurotic tissue, and a point of utmost importance is the fact that the fibers of this tissue lie in bundles parallel with the line of incision so that in closing one may pass the sutures around the fibers and avoid "cutting out," which is not uncommon when closing the vertical incision. In closing the incision, the relaxation afforded by the proper posture of the patient makes it possible to unite the edges of the transverse cut in a relatively short time. When the vertical cut is added to the transverse, the strong lateral pull is at once encountered and the problem becomes more difficult. In this connection an important observation has been impressed upon the writer in comparing the tension upon the sutures used in the vertical cut with that upon those employed in the transverse arm of the "L" incision. In no instance have we found the lateral tension as easy to overcome as the vertical. The transverse incision always comes together more easily than the vertical.

7. **The relaxation afforded during and after operation.** I am convinced that one may obtain greater accessibility through the transverse incision than through the vertical incision of equal length, and most observers agree that there is less post-operative discomfort in the transverse incision patient. This is true, I believe, and is probably due to two important factors: (1) the better exposure afforded by the transverse incision allows the surgeon to do his work with less trauma; and, (2) the line of incision may be relieved of tension to some extent by having the patient assume proper posture (Fig. 1).

Technic.

I wish to outline the incision in the upper abdomen as we employ it, and call attention to the modifications commonly used. Generally speaking, the gall bladder is exposed by a division of the right rectus muscle above the navel at a level which corresponds roughly to the lower border of the liver (Fig. 2). The stomach is exposed by a division of the left rectus (Fig. 4, 5). In either of these incisions we go across the *linea alba* (Fig. 5). If the pathology lies high, the incision may be supplemented by a vertical limb which may be extended to the ensiform if need be (Fig. 4). In making this latter, we avoid the *linea alba* as a matter of

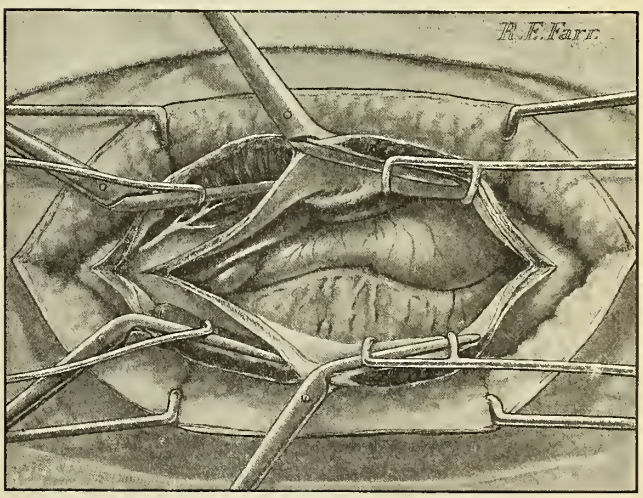

Fig. 6.
Incision through both muscles completed.

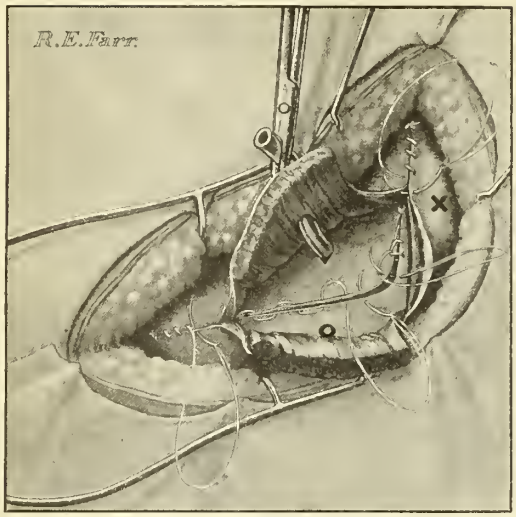

Fig. 7.

Shows method of closing incision. Mattress suture everts peritoneum and transversalis. Clamps removed. The anterior sheath united. Note drainage tube. O marks drainage opening if made below. X marks position of *linea alba*.

preference, dividing first the anterior and then the posterior sheath of the rectus from one-half to one inch from the *linea alba* (Fig. 3). In a large number of instances we have removed the appendix through the transverse gall bladder incision without the necessity of extending it. We have removed the appendix through this incision many times even under local anesthesia.

For the control of hemorrhage the methods illustrated (Figs. 2 to 6) have been devised. A light, angular Pean forceps is placed with one blade behind the muscle, the other in front and made to include the aponeurosis. The muscle is divided between these clamps which are allowed to remain throughout the operation. The upper segment of the muscle is gently loosened from the transversalis which is then split in the direction of its fibers; or, as Meyer[5] has suggested, it may be divided in a diagonal direction corresponding in its course to the Kocher gall-bladder incision. Our preference is for a curved incision in the posterior sheath which in a general way follows the line of the incision in the anterior sheath. It is, however, somewhat farther from the midline and slightly higher than the one in front of the rectus. The posterior flap, therefore, has a curved rather than a rectangular form (Fig. 3).

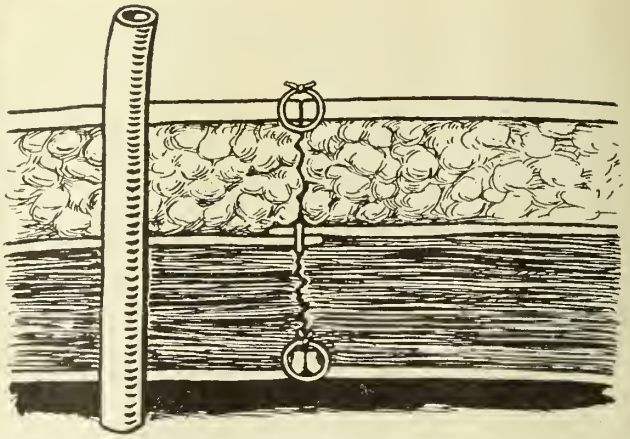

Fig. 8.

Sectional view of closed wound.

Drainage is carried out by means of a stab-wound, generally above the incision in the flap, but below in case the drainage tube would more naturally lie in this position. Post-operative hernia is in this way guarded against to some extent. Enthusiastic reports concerning the transverse incision might lead to the belief that hernia does not occur following it. Our experience shows that hernia does take place in cases that suppurate or in which drainage has been carried out through the incision proper. We have had no hernia in cases that healed primarily, and our impression is that hernia is less liable to occur when the transverse incision is employed.

Closure. A mattress suture (Fig. 7), continuous or interrupted, closes the peritoneum and transversalis muscle, everting the former and taking up some of the slack in the posterior sheath, thus aiding in the approximation of the cut ends of the muscle. The anterior layer may be imbricated provided this is necessary in order to approximate the muscle, using a continuous or interrupted mattress suture (Fig. 8).

The vertical incision still holds the fort, especially in large clinics where old customs are wont to linger longest, though certain modifications are being made with increasing frequency. The past six years have witnessed a vast change in this regard. It is most significant that those who have seen fit to try the transverse incision even a limited number of times are prone to resort to it rather frequently. Boeckman[6] was a pioneer in the use of the

transverse incision. He does not hesitate to divide the rectus muscle either above or below the navel. During recent years Moschowitz[7] has made rather extensive use of the incision, and recently Lilienthal[8] has been favorably impressed with it. Willy Meyer favors combining the transverse with the vertical incision in the midline, dividing the transversalis and peritoneum diagonally after raising the rectus muscle. Quain[9] reports several hundred cases in which he has used the transverse incision with great satisfaction. McArthur's incision, when used for the cases for which he recommends it, is excellent. It conserves the blood supply, muscle, aponeurosis and the very important nerve supply. One should not hesitate to change it to the transverse or vertical in case more room is needed. I have chosen a transverse skin incision when using it.

The impunity with which the rectus muscle may be divided should be kept in mind by all surgeons. If the advantage of this point is utilized in certain cases, an ideal exposure may often be obtained which with the vertical incision is impossible and frequently an almost impossible proposition may be converted into a smooth, easy operative procedure. One should not become wedded, so to speak, to any particular incision. In certain types the vertical, Robson's or Bevan's modification of the same gives the best possible exposure. In the broad, flat, corpulent type the trans-rectus cut will afford the best approach. The advantages of the vertical cut may be used if desired. This practice of varying the incision to suit the case, depending upon the conformation of the patient's body and the pathological problems present, has given us the greatest satisfaction. At the present time we have a patient in the hospital upon whom a cholecystectomy was done through the classical McBurney appendix incision made well below the navel as the gall bladder lay in this position.

REFERENCES.

1. Farr, R. E.: Abdominal Incisions. Journal-Lancet, Nov. 1, 1912.
2. Kocher: Chirurgische Operationslehre, V. Aufl., 1907.
3. Perthes: Deutsche Zeitschr. f. Chir., 1912, No. 37, Vol. 129, 493.
4. Quain, E. P.: Trans. Western Surg. Assn., 1913, 353-369.
5. Meyer, W.: Transverse Abdominal Incisions, Ann. Surg., 1915, lxii, 573-575.
6. Boeckman, E.: Transverse Abdominal Incisions, St. Paul Med. Jour., 1910, No. 12, 255.
7. Moschowitz, A.: Transverse Incisions in the Upper Abdomen. Ann. Surg., 1916, lxiv, 268-289.
8. Lilienthal, H.: Discussion. Trans. Amer. Med. Assn., 1917, 1845.
9. Quain, E. P.: The Transverse Incision in the Upper Abdomen. Journal-Lancet, 1917, xxxvii, 657.
10. McArthur, A. A.: A Modified Incision for Approaching the Gall Bladder. S., G. & O., 1915, xx, 83-84.

TUBERCULOSIS IN CHILDREN—ITS PREVENTION*

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Tuberculosis in the adult has been likened by one writer to the last verse of a song, the first verse of which was sung to the infant in its cradle.

It is the purpose of this paper to consider what may be done to silence this first verse. That a more active interest is necessary is shown by the fact that over a period of fifty years there has been a steadily decreasing mortality rate for adults suffering from this disease, while the rate for children shows little or no change. It may be charged that statistics may be juggled; however, it would seem that with better system of records and improved methods of diagnosis which have been established, errors would be more likely to increase than to decrease the death rate.

Von Bering and Hamburger were among the first to advance the theory now quite generally accepted, that almost everyone has at some time been infected with tuberculosis and that this infection takes place in childhood. The onset of trouble in after life is regarded as a reactivation of the earlier infection, brought about by a lowering of resistance in the individual due to some excessive mental or physical strain. We see the youth of both sexes frequently breaking down at puberty, the young mother at the birth of a child, the

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business man striving to meet strenuous competition, etc.

Tuberculin tests in young children in a vast majority of cases react positively after the age of four or five years, demonstrating that they have a tuberculous infection hidden away somewhere; this is confirmed by post mortem records of children dying from various causes. The reason that the majority of those who react to tuberculin escape the disease is apparently due to the smallness of the infection which they received, and which has set up an immunity. It is thought that the quantity of infection, the size of the dose, or the repetition of small doses at very short intervals plays an important part.

Hess, in a simple experiment was able to show how the injection of small doses of tubercular bacilli into guinea pigs at frequent intervals for a definite time caused tuberculosis, the intervals apparently being too short for resistance to be established, while a single large dose was easily cared for.

At one time heredity was regarded as the most important factor in the cause of this disease, and while a certain number of undoubted congenital cases have been reported, it would hardly appear that any great stress should be laid on this source except to insist that actively tuberculous persons should not be permitted to marry. Prenatal care should be given. In most of the large cities we now find clinics where the expectant mother is watched and given advice so necessary for her own and the child's welfare. Children born of an actively tuberculous mother should be removed to a safe environment immediately after birth. There should be no delay. It should be compulsory for a healthy mother to endeavor to nurse her baby, but it should be equally compulsory that an actively tuberculous mother refrain from so doing and relinquish the child to the care of healthy persons. In some places there have been established preventoria for the care of these unfortunate offspring, where they are kept for at least one year, and the results have more than justified the efforts made to protect these children. This is in line with work which has been done in preventoria for older children and which has proved so successful.

Mothers' milk apparently does not contain tubercle bacilli; at least Wang and Cooley, at the Sea View Hospital at Staten Island, N. Y. were unable to find them in a number of tests, so that it is probably not through the milk but by intimate contact with the patient that the disease is spread—hence the necessity for the child's removal from the mother's vicinity as soon as possible. Some authorities go so far as to say that every infant who is infected with tuberculosis will almost surely die before reaching the age of two years. At the Farmington, N. J., Preventorium, Hess declined to accept infants under one year showing a positive tuberculin test. Elliot says: "Every child under one year showing a positive reaction will die before it is two years old." Perhaps this is a too pessimistic view; nevertheless, it cannot be too strongly impressed upon those who have the care of these young patients how dangerous even a single exposure to the infection may be, and it must be insisted in every case that children should not be allowed to remain in the same house where they may be exposed to anyone suffering from active tuberculosis.

There has just come to my notice within the past month two instances of tuberculous mothers applying for admission to a sanatorium and requesting permission to bring their young babies, the attending physician in each case stating that the child should not be separated from its mother. If physicians are careless on this point, what can we expect of the laity?

Doctors in the course of their practice are seldom a source of danger, but there is the oft-quoted story of the mid-wife who was in the habit of sucking the mucous from the mouths of new born children under her care, and thereby causing a considerable number of deaths until it was found that she was suffering from a far-advanced tuberculosis. A relative with so-called asthma which has persisted for years should be looked upon with suspicion. Maids in a household and those having the care of young children generally should be carefully scrutinized. Another incident may be reported where two children died of tuberculous meningitis, none of the members of whose family was ill in anyway; one of the visiting nurses after careful investigation was able to elicit the fact however, that a young man, a neighbor, who was unable to work because of illness, was in

the habit of caring for these children when the mother was away. He had active tuberculosis.

Cows milk is a fertile source of infectionl Bovine tubercle bacilli have been found in pulmonary disease, but they play a more important part in diseases of the glands and joints, and the law requiring cattle to be tested should be more stringently enforced. Where this cannot be done, the milk should be pasteurized. Since pasteurized milk has been more generally used, there has been a marked reduction of this infection in children. It is curious to note that Claude Riviere thinks that an infection from Bovine Tubercle Bacilli is not altogether undesirable because of the immunity which is set up. He adds, however, that we must be careful not to permit a massive dose of infection such as might occur where milk was taken from one cow alone and that being tuberculous. Griffith found that in 930 cases of tuberculosis occuring in all ages, the bovine organism was the infecting agent in 18.17 per cent. Wang, whose earlier investigation of tuberculosis among children in Edinburgh agreed with these findings, mentions the decline after pasteurization.

Meat from tuberculous cattle is not so dangerous because of the heat required in cooking, and it is pointed out that if less attention were paid to this and more to the milk, it might be easier to persuade farmers to have their herds tested.

The home should not be neglected by those who care for children. More fresh air is greatly desired, particularly in the homes of our farmers.

The inspection of schools is now receiving considerable attention. There is room for more work, however, so that children who are below par may be cared for. Adenoids, bad tonsils and teeth, especially, should be carefully examined and treated. It is time the medical profession was making itself heard above the educators in regard to the cramming process so frequently seen in our schools today, although this might be less harmful were the pupils' health more carefully watched. It is interesting to note that children who are sent to fresh air schools, now being established throughout the country for those below standard physically, in a short time surpass the supposedly healthy children who remain at the regular school, not only gaining in weight but leading in their studies. This surely needs no comment.

Education among the older children should prove of benefit; lectures by health officers or other physicians to these young people would greatly aid.

Tuberculosis in infancy is more fatal than at any other time in life, and we should remember the old adage in this connection, that an ounce of prevention is worth a pound of cure.

Minnesota Medicine

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EDITORIAL

PUBLIC HEALTH BETTERMENT

In this issue appears the notice of appropriations which have been made along the line of the activities of the U. S. Interdepartmental Social Hygiene Board. This board has at its disposal $100,000 to be used at its discretion for stipulated expenses in scientific research that "will discover more effective medical measures in the prevention and treatment of venereal diseases." This research work must be carried on only at universities, colleges or other suitable institutions.

It is encouraging to find that the federal government is concerning itself in the solution of this important problem. Comparatively recently the federal government agreed to allow dollar for dollar any state appropriation for the control of venereal diseases. Activities along this line in the way of spreading information, supplying free anti-syphilitic medication and maintaining free clinics have been started in this state and have shown practical results.

The tendency of our present State Legislature to omit the appropriation for this activity in the future and thus not to take advantage of the federal aid is difficult to understand.

The medical profession is in favor of activities of this sort which come under the general head of preventive medicine and control of contagion. It is not interested from a pecuniary standpoint however. In furthering preventive medicine the profession is cutting down its own income.

Shall the attitude of the profession be one of "laissez faire" and leave it to the public at large to institute necessary legislative measures for the control of the public health? The average physician has little time to give to politics and prefers to keep out of them. He has still less desire to concern himself in furthering legislation which will indirectly cut down his income. When he sees, however, that certain legislation is pernicious and the result of petty political policies or ignorance he is in duty bound to do his share in his own community towards informing his legislative representative what measures should be carried out.

MINNEAPOLIS CLINIC WEEK

In our March issue the dates May 6th to 9th inclusive were announced for Minneapolis Clinic Week. It was also announced that further information would be given in the next issue. As nothing further could be obtained as to the nature of the clinics in time for our April issue, this further information had to be deferred to the May issue. We take pleasure in announcing in this issue the program for this interesting week as completely as possible. The surgical clinics are necessarily difficult to announce very far in advance.

Clinic Week will undoubtedly prove very popular, this year particularly. Many of us have gotten more or less out of touch with the trend of certain phases of medical and surgical thought during the past year or two. Clinics of this sort are ever valuable but this year for the above reason particularly so.

The banquet Thursday evening will be attractive from a social standpoint, an undeniably valuable side to every medical assembly.

Your attention is called to the nature of the program.

PROPOSED BUDGET FOR A NEW STATE BOARD OF HEALTH ACTIVITY

The Division of Child Conservation of the Minnesota State Board of Health has been in existence for six months under the direction of Dr. E. J. Huenekens. While the time is too short to make any deductions as to its permanent value, sufficient progress has been made to evolve an organization and prove that there is a demand for such service worthy of the support of physicians generally throughout the state.

The history of the founding of this division is interesting. The director was called to Little Falls about a year and a half ago to attend a sick baby. When he arrived he found that the nurse in attendance had gathered seven or eight babies for him to examine and that he was conducting an informal Infant Welfare Clinic. The condition of these babies casually gathered together demonstrated to him the need for such work in the smaller towns, so after consulting with public spirited local people and arranging a preliminary meeting with the local physicians to obtain their co-operation, he returned and conducted an informal Infant Welfare Clinic which was a marked success. These clinics were repeated at three month intervals; the local community nurse doing the follow-up work in the meantime.

The Secretary of the State Board of Health on hearing of the work done by the Director and seeing that it fitted in so well with the proposed line of Child Welfare Work of the Board, for which an appropriation had been asked of the Legislature in 1917, undertook to assist this work on a small scale until the request for funds for such work could be repeated to the present Legislature, and this beginning used as a demonstration of both the need of the work and its practical application. In July, 1918, at a meeting attended by all the pediatricians of the state, it was recommended that the Division of Child Conservation of the State Board of Health be established and Infant Welfare Clinics begun in the smaller communities of the state. This recommendation was acted on at the July meeting of the State Board of Health, the Division formally organized, the appointment of the director confirmed, and an advisory commission for the work suggested. This commission was modeled after a similar body in Massachusetts and consisted of the President, Secretary and Director of the Division of Child Conservation for the State Board of Health, the Secretary of the Child Welfare Division of the State Board of Control, a pediatrician, an obstetrician, and five other prominent men and women of the state interested in Child Conservation.

It was deemed advisable to establish clinics only where there was a local demand and some kind of a local organization which could make the preliminary preparations. The weighing and measuring of children initiated by the Children's Bureau at Washington had preceded the work of this Division, and was of value in awakening interest. The Children's Year Committee also co-operated heartily. Applications for clinics poured in.

When a request for a clinic is received, the head nurse of the Division visits the community, explains the object of the work, advises what is necessary in the way of equipment, meeting place, volunteer assistants, etc. and a day is set for the clinic. The advertising of the clinic is left to the local people. On the day before the clinic the community is again visited to make sure that all preparations have been made; the local physicians are invited to attend, and to them is explained the fact that healthy babies also are received; advice is given as to the proper diet, especially the value of breast feeding; the directions as to clothing and general hygiene, and if pathological conditions requiring medical or surgical conditions are found the patients are referred to the family physician for treatment. The clinic is conducted by the Director himself, or his assistants, Doctors E. D. Anderson and A. E. Johann, with volunteer workers who assist in weighing the babies and taking preliminary histories. The record which is kept is accessible to the family physician. At the close of the clinic an address is given, explaining the plan of the work, dilating upon the necessity for it and announcing that the clinics will be repeated at three month intervals, providing the community employs a public health nurse to do the follow-up work.

Clinics were held in Little Falls, Wheaton, Thief River Falls, Sauk Center and Waseca until the influenza epidemic put a temporary stop to the work. During March, 1919, the work was resumed again and arrangements for clinics made at:

Mountain Iron	March 3
Ely	March 5
Hastings	March 6
Moorhead	March 11
Wheaton	March 12
Brainerd	March 14
Crosby	March 15
Grand Rapids	March 17
Pine City	March 22
Wayzata	March 26
Westbrook	March 28
Wheaton	March 29

The plans for April include:

Canby	April 2
Granite Falls	April 3
Clarkfield	April 4
Blue Earth	April 5
Little Falls	April 6
Sleepy Eye	April 10
Moorehead	April 12
St. Louis Park	April 14
Glenwood	April 15
Brainerd	April 18
Crosby	April 19

The last ten days of April to be given to St. Louis County. In May and June, Madison and Mora will be visited. International Falls has requested that their County be given one week.

The budget placed before the Legislature is the repetition of the request made two years ago, and is deserving of the heartiest support from the physicians generally, and from parents interested in Child Conservation. It calls for a Director on part time, Assistant Director on full-time, three nurses, a stenographer and clerk, a total request of $15,000 per annum.

This work belongs in the field of Preventable Medicine, and as such is as much a function of the Board of Health as epidemiology. It should do much to insure the future against the lamentable findings of draft boards where such a large proportion of adults were found to be suffering from defects due to conditions which could have been easily remedied in childhood.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

The mid-summer meeting of the Southern Minnesota Medical Association is scheduled for June 30th and July 1st, 1919 at Rochester, Minn. The program committee consists of Dr. A. F. Schmitt, Chairman, Mankato, Minn.; Dr. H. W. Meyerding, Rochester, and Dr. E. M. Hammes, St. Paul. Further particulars will be published in a later issue. Reserve the two days, as an enthusiastic meeting after the interruption due to war absence is indicated.

MINNEAPOLIS CLINIC WEEK

The second annual Minneapolis Clinic Week will be held May 6th to 9th inclusive. Forenoons will be devoted to clinics in the various Minneapolis hospitals, each afternoon will be devoted to a symposium, largely medical.

The program is as follows:

SURGICAL

Hill Crest Hospital:

Tuesday—General Surgical Clinic.
Wednesday—
Thursday—Radium Application, Demonstration and Results. Dr. J. W. Little and Dr. A. S. Fleming.
Friday—Bone Clinic, Dr. E. K. Green.

St. Barnabas Hospital:

Eye and Ear, Dr. J. F. Schefcik.
Abdominal Surgery, Dr. A. E. Benjamin.
Abdominal Surgery, Dr. J. H. Simons.
General Surgery, Dr. F. A. Dunsmoor.
Eye, Nose and Throat, Dr. G. Elmer Strout.
Nose and Throat, Dr. G. L. Doxey.
Abdominal Surgery, Dr. H. C. Stuhr.
General Surgery, Gall-bladder, Goiter, Dr. Earl Hare.
General Surgery, Dr. R. F. Farr.
Surgery, Dr. A. F. Booth.

Northwestern Hospital:

Tuesday—Two Thyroidectomies, Dr. G. Schwyzer.
Nose and Throat Surgery, Dr. E. S. Strout, Dr. Horace Newhart, Dr. Douglas Wood.

Wednesday—Two Ligations for Intrathoracic Exophthalmic Goiter; Excision of Pan-Ovarian Cyst, Dr. F. Poppe.

Thursday—Four Laparotomies, Dr. A. E. Benjamin.

General Surgery, Dr. Arthur Mann.

Abbott Hospital:

General Surgery, Dr. Arthur Strachauer.
Abdominal Surgery, Dr. A. W. Abbott.
Pediatrics, Dr. J. P. Sedgwick.

MEDICAL

Tuesday, May 6th.

Influenza and its Pneumonias, Dr. H. Ulrich, Chairman.

1. Pathology with demonstrations, Dr. H. E. Robertson.
2. Symptomatology, Dr. T. A. Peppard.
3. Bacteriology, Dr. W. P. Larson.
4. Treatment, Dr. E. L. Gardner.
5. Empyemas, Dr. A. A. Law.
6. Surgery, Dr. A. T. Mann.
7. Neurological, Dr. C. E. Nixon.
8. Head Complications, Dr. J. D. Lewis.

Wednesday, May 7th.

Diseases of the Heart—Dr. J. G. Cross, Chairman.

1. Heart Affections: Auricular fibrillation; auricular flutter, etc.; clinical recognition and treatment, Dr. J. E. Hynes.
2. Angina Pectoris and Chronic Myocarditis; diagnosis and treatment, Dr. J. W. Bell.
3. Heart Affections in the Child, Dr. F. C. Rhodda.
4. Surgery of the Heart and Pericardium, Dr. J. W. Little.
5. Selected Demonstrations in Heart Pathology, Dr. H. E. Robertson.

Thursday, May 8th.

Synopsis on Syphilis—Dr. S. E. Sweitzer, Chairman.

1. Syphilis from a Public Health Standpoint, Dr. H. G. Irvine.
2. Pathology of Syphilis, Dr. E. T. Bell.
3. The Importance of Early Diagnosis and Treatment of Syphilis, Dr. John Butler.
4. Tertiary Syphilis of Internal Organs, Dr. J. P. Schneider.
5. Genito-Urinary Syphilis, Dr. F. R. Wright.
6. Differential Diagnosis of Nervous Syphilis, Dr. W. A. Jones.
7. Treatment of Neuro-syphilis, Dr. Angus Morrison.

Discussions opened by Dr. G. M. Olson and Dr. H. E. Michelson.

Friday, May 9th.

Focal Infection—Dr. S. M. White, Chairman.

1. Factors to be Considered in the Conservation or Extraction of Infected Teeth, Dr. T. B. Hartzell.
2. The Relation of Peribronchial Infection to Other Foci, Demonstrations, Dr. F. S. Bissell.
3. Focal Infection as Related to the Eye, Dr. Douglas Wood.
4. Focal Infection as Related to Suppuration in Nose and Throat, Dr. E. H. Parker.
5. A Further Reason for the Reduction of Focal Infection, Dr. H. L. Ulrich.

The Hennepin County Medical Society will hold a banquet, Thursday evening, May 8th, Lt. Col. Seelig of St. Louis will be the speaker.

The Minnesota Academy of Ophthalmology and Oto-Laryngology will give a dinner during Clinic Week, the date and speaker to be announced later.

MINNESOTA ACADEMY OF MEDICINE

Regular meeting of the Academy of Medcine was held at the Town and Country Club, April 9, 1919. President Christison, twenty members and two visitors present.

In the absence of the secretary no minutes were read, and Dr. R. E. Farr was appointed secretary pro tem.

The president asked for volunteers for papers for the next meeting. Election of new members was postponed.

REPORTS OF CASES

Dr. J. G. Cross reported the case of a woman with pain in the right side of the neck. No cause for pain could be found, and after some months Dr. Little resected the ascending branches of the cervical plexus, with complete relief. Dr. Cross could give no explanation of the pathology.

Dr. A. W. Abbott in discussion said that he thought the operation would be unsuccessful, as most operations of this kind are.

Dr. C. M. Carlaw reported the case of a woman with pain in her neck and much like the case of Dr. Cross, and found that this patient had a well developed duodenal ulcer with sub-acute perforation.

Dr. S. Marx White reported as a complication of influenza seen in France numerous abscesses in the rectus muscle. One of these showe l pneumococcus pus, one hemorrhage in the sheath of the rectus, another a tumor in the right rectus over the gall bladder, which disappeared under anesthesia and localized peritonitis was found present, with streptococcus infection.

Dr. A. T. Mann, Dr. H. W. Jones and Dr. Robert Earl reported similar cases.

Dr. H. E. Robertson discussed Zenker's degeneration in relation to this condition.

Dr. H. L. Ulrich reported seeing no abscesses, but many cases of myositis following influenza and pneumonia.

Dr. Oscar Owre reported a case of nephrolithiasis, showing X-rays and specimens of an extensive kidney stone, in which the patient had almost no pain.

Dr. R. E. Farr reported a similar case, the stone weighing $2\frac{1}{2}$ ounces, and called attention to the fact that in large stones pain is less likely to be present than in small ones, and the most painful thing in connection with stone occurred when the stone was moving.

Dr. A. W. Abbott stated that this agreed with his experience.

Dr. Alex Colvin discussed the propriety of removing kidney stones when the other kidney is affected. He reported a case of a child of eight years with complete anuria for several days, with relief followed by the passing of a small stone through the urethra.

Dr. H. W. Jones narrated some experiences of a friend who had been in the war.

Dr. Gustav Schwyzer reported a case of exophthalmic goitre, with a ligation of the right superior thyroid nine years ago, the right inferior thyroid seven years ago, thyrodectomy by Dr. Farr seven months ago, with a rapid enlargement of the remaining portionof the left lobe last month, with acute toxic symptoms. Operation and recovery.

Dr. Gustav Schwyzer reported a case of carcinoma of the stomach, with extensive peritoneal involvement, although history dated back but three weeks.

Dr. Robertson discussed this case, calling attention to research work that had shown that ovarian implantation took place in a large percentage of cases of carcinoma of the stomach.

The meeting then adjourned.

OBITUARY

DR. N. DUMONT

Dr. N. Dumont died March 25th at his home in Little Falls, Minn. He was born in Canada in 1862 and came to the United States in 1889, and located in Little Falls, where he has been practicing since.

DR. FRANK H. HALL

Dr. Frank H. Hall died March 26th at the home of his daughter in Faribault, Minn. Dr. Hall was 73 years of age and was born in Neury, Ireland, coming to this country when he was four years of age. He was a physician at the state penitentiary in Stillwater for many years. Two daughters and one son survive him.

DR. G. A. RENZ

Dr. G. A. Renz, St. Paul, died at the age of 58 years, April 13, at his home. For the past twenty years Dr. Renz has been prominent in St. Paul medical circles having been an official in the St. Paul department of health for the past fourteen years. He was chief health officer in 1900. Dr. Renz is survived by his widow and two brothers.

OF GENERAL INTEREST

Dr. P. H. Munger, St. Paul Park, Minn., has moved to Winthrop, Minn.

Dr. Leonard Rowntree, University of Minnesota, has been made lieutenant colonel.

Dr. A. G. Moffat who has been practicing in Litchfield will return to Howard Lake, Minn.

Dr. Josephine Tofte of Pine City, Minn., is ill in the Hillcrest Hospital in Minneapolis.

Dr. L. L. Gibbon has returned to Lowry, Minn., after spending more than a year as surgeon in the army.

Dr. C. H. Patterson, who has been practicing in Lisbon, N. D., for a short time, has returned to Barnesville, Minn.

Word has been received that Dr. J. C. Staley, St. Paul, has been promoted to the rank of lieutenant colonel.

Dr. Otto J. Seifert, New Ulm, Minn., who has commanded Train Hospital No. 58, has been promoted to the rank of Major.

Dr. G. F. Schmidt, Pipestone, Minn., now in active service with the United States Medical Corps has been promoted to the rank of Major.

Dr. J. C. Michael, St. Paul, has been in Berlin since February on duty in connection with the American commission to negotiate peace.

Dr. L. J. Holmberg, who has been in the Medical Corps has received his honorable discharge and has returned to his home in Canby, Minn.

Dr. L. A. Williams who has been stationed at U. S. Army Hospital No. 33, Arkansas, has returned to Slayton, Minn., to resume his practice.

After serving nine months with the United States Medical Corps in France, Dr. M. E. Withrow has resumed his practice at International Falls.

Dr. C. B. Drake who has been stationed at Ft. Henry, Md., has been honorably discharged and has resumed his practice with offices at 949 Lowry building, St. Paul, Minn.

Dr. C. C. Burlingame, formerly physician, St. Peter State Hospital, now with the American Expeditionary Forces overseas, has been decorated by the Polish government.

Dr. Charles C. Allen, Austin, Minn., became identified with the firm of Drs. Lewis, Rebman and Grise. The new firm will be know as "Austin Clinic."

Dr. John Butler of Minneapolis has returned to the city after one and a half years absence in service in the United States Army. He has resumed practice at his office 1042 Metropolitan Bank Building.

Alpha Omega Alpha, Honorary Medical Fraternity, held its annual banquet at the Minneapolis Club, April 24. Drs. S. M. White, T. H. Dickson, E. P. Lyon, B. Gallagher, H. E. Robertson and S. F. Herrmann responded to toasts.

The United States Interdepartmental Social Hygiene Board, through its Executive Secretary, Dr. T. A. Storey, 1800 Virginia Avenue, N. W., Washington, D. C., announces the following appropriations from the Scientific Research Fund of the Board:

Leland Stanford Junior University Medical School

(1). "Investigation into more effective treatment in acute and chronic gonorrhea," under the direction of R. L. Rigdon, M. D., Clinical Professor of Genito-Urinary Surgery, and A. B. Spalding, M. D., Professor of Obstetrics and Gynecology $2,300

(2). "The permeability of the meninges to anti-syphilitic drugs—an attempt to increase their permeability," under the direction of H. G. Mehrtens, M. D., Clinical Professor of Neurology 2,300

(3). "Investigation into more effective methods of treating syphilis," under the direction of H. E. Alderson, M. D., Clinical Professor of Dermatology 2,600

Total $7,200

University of Michigan, College of Medicine and Surgery

(1). "A research for an improved method of demonstrating the spirochaeta pallida in human tissues," under the direction of A. S. Warthin, M. D., Professor of Pathology $6,000

NEW AND NON-OFFICIAL REMEDIES

During February the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Non-Official Remedies:

Non-proprietary Articles:
Biologically Reactive Food Proteins.
Merck and Company:
Tannin Albuminate Exsiccated-Merck.
E. R. Squibb and Sons:
Cow's Milk Allergens-Squibb.
Egg Allergens-Squibb.
Wheat Allergens-Squibb.
Takamine Laboratory:
Neoarsaminol, 0.15 Gm. tubes.
Neoarsaminol, 0.3 Gm. tubes.
Neoarsaminol, 0.45 Gm. tubes.
Neoarsaminol, 0.6 Gm. tubes.
Neoarsaminol, 0.75 Gm. tubes.
Neoarsaminol, 0.9 Gm. tubes.

NEW AND NON-OFFICIAL REMEDIES

Sulphoichthyolate Preparations.—Preparations containing as their essential constituents salts or compounds of a mixture of acids containing sulphur and designated by the group name "sulphoichthyolic acid" are manufactured from certain bituminous shales. Sulphoichthyolic acid is characterized by a high sulphur content, the sulphur existing largely in the form of sulphonates, sulphones and sulphides. The ammonium compound of this sulphoichthyolic acid—first introduced as ichthyol—has been used extensively. The current estimate of the therapeutic effects of sulphoichthyolate preparations is based almost entirely on the use of ichthyol. As it is not known to what constituent or constituents of ichthyol such effects as it may have are due, the actions of ichthyol can not be transferred to similar preparations which differ from ichthyol in their composition. The use of sulphoichthyolate preparations is still largely empirical, and the evidence for their use unsatisfactory.

Ittiolo.—An ammonium sulphoichthyolate preparation manufactured from bituminous shales found in Giffoni Vallepiana, Italy. Its composition closely resembles that of ichthyol. Since ittiolo closely resembles that of the original ichthyol, it is claimed that its actions and uses are also essentially those of ichthyol. Guiseppe W. Guidi, New York.

Quinine Ethyl Carbonate-Merck.—First introduced as euquinine. It is almost insoluble in water, and is therefore practically tasteless. Its actions, uses and dosage are essentially those of ordinary quinine salts. Merck and Co., New York Jour. A. M. A., Feb. 1, 1919, P. 345).

Biologically Reactive Food Proteins.—The purified and concentrated proteins of foods. These protein products are used in cases in which persons show a peculiar hypersensitiveness or idiosynerasy to certain articles of the dietary, both to determine to which food it is due and to immunize the patient against the effects of the food. The test for sensitiveness is made by scarifying the skin and rubbing in the protein to be tested, either dry or in solution. When the production of an urticarial wheal identifies the protein to which a patient is sensitive, the patient is desensitized by administration of gradually increasing amounts of the offending food of the isolated food protein itself.

Cow's Milk Allergens-Squibb.—A powder representing all the soluble proteins obtained from cow's milk. It is a fine, white, odorless powder, somewhat soluble in water and physiological sodium chloride solution. Cow's milk allergens-Squibb has the actions and uses of Biologically Reactive Food Proteins. E. R. Squibb and Sons, New York.

Egg Allergens-Squibb.—A powder representing all the soluble proteins contained in hens' eggs. It is a fine, white powder, odorless, somewhat soluble in water and physiological sodium chloride solution. Egg allergens-Squibb has the actions and uses of Biologically Reactive Food Proteins. E. R. Squibb and Sons, New York.

Wheat Allergens-Squibb.—A powder representing all the soluble proteins contained in wheat. It is a granular powder nearly white, odorless, somewhat soluble in water and in physiological sodium chloride solution. Wheat allergens-Squibb has the actions and uses of Biologically Reactive Food Proteins. E. R. Squibb and Sons, New York (Jour. A. M. A., Feb. 22, 1919, P. 573).

PROPAGANDA FOR REFORM

B. Iodine and B. Oleum Iodine.—The Council on Pharmacy and Chemistry reports that while B. Iodine (The B. Iodine Chemical Company) is said to be "Nitrogen Hydrate of Iodin" and B. Oleum Iodine, a 5 per cent solution thereof, the examination made in the A. M. A. Chemical Laboratory indicates that the first is a simple mixture of iodin and ammonium iodid, and the second a solution of iodin in liquid petrolatum. The Council declared these preparations inadmissible to New and Non-Official Remedies because: 1. The composition of B. Iodine is incorrectly declared. B. Iodine is not a newly discovered iodin compound, but a mixture of iodin and ammonium iodid. B. Oleum Iodine is not a 5 per cent solution of B. Iodine as suggested by the statement on the label and in the advertising, but an 0.85 per cent solution of iodin in liquid petrolatum. 2. Since the solution of B. Iodine in water will have the properties of other solutions of iodin made by the aid of iodid, the therapeutic claim made for it is unwarranted. 3. The names "B. Iodine" and "B. Oleum Iodine" are not descriptive of the pharmaceutical mixtures to which they are applied. 4. The preparations are unessential modifications of established articles. The first has no advantage over tincture of iodin or compound solution of iodin, and the second no advantage over extemporaneous solutions of iodin in liquid petrolatum (Jour. A. M. A., Feb. 1, 1919, P. 365).

Misbranded Nostrums.—The following nostrums were declared misbranded under the Federal Food and Drugs Act because of the false, fraudulent or misleading claims made for them: M. I. S. T. (Murray's Infallible System Tonic); M. I. S. T. No. 2, Nerve Tonic; Imperial Remedy; "Japanese Wild Cherry Cough Syrup;" "Japanese Herb Laxative Compound;" Dr. E. E. Burnside's Puri-

fico No. 1; Dr. E. E. Burnside's Purifico No. 2; Dr. E. E. Burnside's Purifico No. 3; Emerald Oil; Bristol's Sarsaparilla; Dr. Belding's Six Prairie Herbs; Dr. Carter's K. and B. Tea; "Brazilian Balm;" "Renal Tea;" Las-I-Go for Superb Manhood; Blood Tabs; Dr. Miles Restorative Nervine; Kilmer's Swamp Root; Homenta; Hinkley's Bone Liniment; Kopp's Baby's Friend; Kopp's; Kopp's Kidney Pills; Reuter's Syrup; Garfield Tea; Di-Col-Q; Sloan's Linament; Bannerman's Intravenous Solution; Cummings Blood Remedy and Giles' Germicide (Jour. A. M. A., Feb. 8, 1919, P. 439).

Cerelene not Admitted to N. N. R.—Cerelene, a paraffin preparation for the treatment of burns, was submitted to the Council on Pharmacy and Chemistry by the Holliday Laboratories with the statement that it was composed of 84 per cent paraffin, 15 per cent myricyl palmitate stated to be purified beeswax, and 1 per cent purified elemi gum, to which are added oil of eucalyptus, 2 per cent, and betanaphthol, 0.25 per cent. It was stated that on "special order" Cerelene has been made containing oil of eucalyptus and resorcin, oil of eucalyptus and picric acid, and picric acid alone. The Council declared Cerelene inadmissible to New and Non-Official Remedies because there was no evidence to show that this preparation had any advantage over simple paraffin of low melting point (Paraffin for Films—N. N. R.) because there is no proof that the medicinal ingredients leave the wax when it is used, and because the constituent "myricyl palmitate" has not been accepted for New and Non-Official Remedies (Jour. A. M. A., Feb. 15, 1919, P. 513).

Beef, Wine and Iron.—So long as one of the largest mail order houses in this country continues to sell Vinum Carnis et Ferri, N. F. in gallon jugs, the drought from prohibition legislation may not be as noticeable as it might otherwise. Seriously, however, is it not about time for the professions of medicine and pharmacy to heave into the discard such utterly unscientific combinations as "Beef, Wine and Iron" (Jour. A. M. A., Feb. 15, 1919, P. 498)?

Misbranded Nostrums.—The following nostrums were declared misbranded under the Federal Food and Drugs Act because of the false, fraudulent or misleading claims made for them: Hail's "Texas Wonder;" King's Liver and Kidney Alterative and Blood Cleanser; En-Ar-Co Oil; Lindsey's Improved Blood Searcher; White Eagle's Indian Oil Liniment; Aqua Nova Vita; Brown's New Consumption Remedy; Akoz Ointment; Akoz Rectal Suppositories; Akoz Powder; Akoz Dusting Powder: Akoz Plaster; Akoz Compound; Fenner's Kidney and Backache Remedy, and Wine of Chenstohow (Jour. A. M. A., Feb. 22, 1919, P. 591).

Styptics.—Ordinary bleeding has a strong tendency to stop spontaneously with the formation of a clot, so that the benefit attributed to a drug that has been used as a hemostatic can not easily be evaluated. Evidence of the current confusion of cause and effect in relation to local hemostatics has been furnished by P. J. Hanzlik. In general he finds that the local application of vasoconstrictor and astringent agents diminishes or arrests local hemorrhage, while vasodilator and irritating agents (without astringent action) increase local bleeding. The value of the newer thromboplastic agents of the kephalin or tissue extract type is considered as still uncertain. Epinephrin remains as the most efficient and desirable hemostatic agent. Tyramin and pituitary extracts were found efficient, and, unlike epinephrin, they do not increase bleeding later. Astringents were found variably effective, ferric chlorid and tannin standing highest, while alum was disappointing. The vaunted cotarnin salts (stypticin and styptol), antipyrin and emetin were found to increase bleeding on local application (Jour. A. M. A., Feb. 22, 1919, P. 577).

Wildroot Dandruff and Eczema Cure.—Dr. Harvey W. Wiley, in his book, "1001 Tests," thus characterizes this preparation: "Contains arsenic, and some phenolic body, probably resorcin; perfumed and colored. The trace of alkaloidal material present was too small for identification. Contains 40 per cent of alcohol, as declared, and less than one-half of 1 per cent of non-volatile matter. Claims that it is an herb compound and a positive remedy for eczema and dandruff obviously untenable" (Jour. A. M. A., Feb. 22, 1919, P. 594).

Benzyl Alcohol.—While experience alone will tell whether or not the local anesthetic benzyl alcohol or phenmethylol will come up to the expectations of the discoverer of its action, it was deemed of sufficient promise by the Council on Pharmacy and Chemistry to warrant its admission to New and Non-Official Remedies (Jour. A. M. A., Feb. 22, 1919, P. 594).

During March the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Nonofficial Remedies:

Swan-Myers Company:
- **Swan's Mixed Acne Bacterin (No. 41).**
- **Swan's Pertussis Bacterin (No. 38). (Prophylactic).**
- **Swan's Mixed Furunculosis Bacterin (No. 39).**
- **Swan's Typhoid-Paratyphoid Bacterin (No. 42.) (Prophylactic).**

NEW AND NON-OFFICIAL REMEDIES

Tannin Albuminate Exsiccated (Merk).—A compound of tannic acid and albumin thoroughly exsiccated and containing about 50 per cent. tannic acid in combination. It was first introduced as tannalbin. The use of tannin albuminate is based on the assumption that the tannin would pass the stomach largely unchanged, and thus the astringent action be exercised in the intestine where the compound would be decomposed by the intestinal fluid. It is used in diarrhea, particularly that of children and in phthisis. Merck and Col., New York.

Tannin Albuminate Exsiccated-Merck Tablets, 5 Grains.—Each tablet contains 5 grains tannin albuminate exsiccated, Merck. Merck and Company, New York (Journ. A. M. A., March 1, 1919, p. 653).

Neoarsaminol.—A brand of neoarsphenamine complying with the N. N. R. standards (see New and Non-official Remedies, 1919, p. 41). Nearsaminol is supplied in tubes containing, respectively, 0.15 Gm., 0.3 Gm.,

0.45 Gm., 0.6 Gm., 0.75 Gm., and 0.9 Gm. Neoarsaminol is manufactured under the "neosalvarsan patent" by license of the U. S. Federal Trade Commission by the Takamine Laboratory, Inc., New York.

Swan's Mixed Acne Bacterin (No. 41).—Marketed in 6-Cc. vials, each cubic centimeter containing 25 million killed acne bacilli and 500 million killed Staphylococcus pyogenes albus. For a discussion of "Acne" vaccine, see New and Nonofficial Remedies, 1919, p. 296. Swan-Myers Company, Indianapolis, Ind.

Swan's Pertussis Bacterin (No. 38) (Prophylactic).—Marketed in packages of three 1-Cc. vials, containing, respectively, 50, 100 and 200 million killed pertussis bacilli. For a discussion on Pertussis Bacillus Vaccine, see New and Nonofficial Remedies, 1919, p. 287.

Swan's Mixed Furunculosis Bacterin (No. 39).—Marketed in 6-Cc. vials, each cubic centimeter containing 500 million killed Straphyloccocus pyogenes aureus and 500 million killed Straphyloccocus pyogenes albus. For a discussion of Straphylococcus Vaccines, see New and Nonofficial Remedies, 1919, p. 289.

Swan's Typhoid-Paratyphoid Bacterin (No. 42), (Prophylactic).—Marketed in packages of three 1-Cc. vials, one vial containing 500 million killed typhoid bacilli and 250 million each of paratyphoid bacilli A and B, while the other two vials each contain 1 billion killed typhoid bacilli and 500 million each of paratyphoid bacilli A and B. For a discussion on Typhoid Vaccine, see New and Nonofficial Remedies, 1919, p. 292 (Jour. A. M. A., March 22, 1919, p. 863)

PROPAGANDA FOR REFORM

Malt Preparations in Infant Feeding.—Malt preparations have enjoyed popularity for some time in the feeding of infants. A familiar mixture is the so-called malt soup, the use of which was modified by Keller to include potassium carbonate. The assimilibility of maltose has been highly lauded, but the advantage over other carbohydrates has not been definitely proved. Maltose has been vaguely stated to be indicated in the constipation of infants and the retention of calcium facilitated by the use of Keller's formula. However, in experiments on animals it was not found that administration of a base like sodium carbonate produced any effect on the balance of calcium. It has also been reported that in a normal infant the addition of alkali to milk produced an unfavorable effect on calcium retention. Without addition of alkali, malt extract was found to act beneficially on calcium storage, but this is probably not due to the maltose. If malt soup has a favorable effect on calcium metabolism, it is not due to the alkali originally present or added to it. There is no reason at present to attribute the seemingly substantiated benefit from malt preparations on calcium storage to the maltose (Jour. A. M. A., March 1, 1919, p. 656).

Pharmaceutical Manufacturers and "Private Formula" Products.—Sharp and Dohme explain that it is their inflexible rule that all "private formula" orders intended for public distribution are refused until the copy for the "literature" has been studied by their experts. They explain that an order for three preparations which were later the subject of prosecution for misbranding under the Federal Food and Drugs Act were filled and shipped in the belief that the copy had been passed on by their Spanish expert, when in reality this had not been done. The house of Sharp and Dohme feels that it has been done an injustice in the publication of the "misbranded nostrum" notices which gave no hint the preparations were private formula products, and were not sold under the name of Sharp and Dohme. The firm believes that an injustice was done in that the references to these misbranded nostrums will lead reader to believe that they were sold under the label of Sharp and Dohme. There is unfortunately a commercial distinction between products which are made by a firm and products which are sold by it. Whether or not there is any moral difference between profiting by the manufacture of a "patent medicine," that is to be retailed by some one else, and selling the same medicine under one's own name, is a question (Jour. A. M. A., March 1, 1919,p. 669.)

Misbranded Nostrums.—The following nostrums were declared misbranded under the federal Food and Drugs Act because of the false, fraudulent or misleading claims made for them: Alkavis; Sulferro-Sol; Gonorrhea and Gleet 3 Day Cure; Old Indian Fever Tonic; Pain-I-Cure; Walker's Dead Shot Colic Cure (Jour. A. M. A., March 1, 1919, p. 670).

Saccharin—After the War.—Having satisfied a need during the sugar shortage, the manufacturers of saccharin appear not to be content to turn their talents and plants to better uses, but suggest that the great commercial sacrifices made in setting their works into operation to produce saccharin should be rewarded by permission to continue the traffic under post-war conditions. The referee board to which the saccharin question was referred in this country has by no means given a clean bill of health to the chemical, and the people need to be protected from the danger, or at least the deception, of a substitute for sugar which is in no sense a true food (Jour. A. M. A., March 8, 1919, p. 729).

Organo Tablets and Orchis Extract.—The Organo Product Co., Chicago, sells Organo Tablets as a cure for "lost vitality." The Packers Product Co., sold Orchis Extract until it was put out of business by the government in 1918 by the issuance of a fraud order. Even a superficial comparison of the circular letters and booklets used in exploiting Organo Tablets shows a close connection between this humbug and the government declared fraud —Orchis Extract. Has Orchis Extract of the Packers Product Co. become Organo Tablets of the Organo Product Co. (Jour. A. M. A., March 8, 1919, p. 746).

Depilagiene.—The A. M. A. Chemical Laboratory reports that "Franco-American Hygienic Depilagiene", a hair remover, essentially is a mixture of barium sulphate, barium sulphid, sulphur and starch. The amount of barium sulphid was found to be 22.6 per cent.: this is equivalent to about 45 per cent. of commercial barium sulphid. Depilagiene has no claim to originality, as. practically all chemical hair removers are composed of some form of sulphid. Naturally, the preparation is likely to cause more or less irritation of the skin (Jour. A. M. A., March 8, 1919, p. 746).

Validity of Provisions Concerning "Patent" Medicines.—In the proceedings instituted by E. Fougera and Co., Inc. against the City of New York et al, the Court of Appeals of New York holds that the provision of the sanitary code is not unconstitutional in that it prescribed the formula disclosure of medicines. The purposes and effects of the code were well within the police power and had the object of protecting the public. "No man has a constitutional right to keep secret the composition of substances which he sells to the public as articles of food" (State v. Aslesen, 50 Minn. 5, 52 N. W. 220). If that is true of food, it is even more plainly true of drugs. But there was one objection to the ordinance, though one that amendment might correct; that the ordinance did not except existing stores of merchandise in the hands of dealers, in that the board of health exceeded the powers delegated to it (Jour. A. M. A., March 8, 1919, p. 753).

The Victory Over Rabies.—Amid the victories on the European battlefield, we may pause to contemplate man's conquest of rabies. During the year 1916, 1,008 persons in the district of Lyons received the antirabic treatment. A single death in this list places the mortality at 0.099 per cent. Since 1900, more than 9,000 persons have received antirabic inoculations, with a total of nine deaths, or 0.1 per cent (Jour. A. M. A., March 15, 1919, p. 800).

Nature's Remedy Tablets.—A. H. Clark, of the A. M. A. Chemical Laboratory, reports that "Nature's Remedy" is claimed to contain ten ingredients; that the manufacturers declare seven of these—burdock, juniper, sarsaparilla, mandrake, rhubarb, dandelion, and prickly ash; and that the manufacturers state they are "more proud" of the other three, but refrain from naming them for fear of imitators. Clark's analysis, supplemented by a microscopic examination by E. N. Gathercoal at the University of Illinois School of Pharmacy, indicated that the unnamed drugs are aloes (or a preparation of aloes,) cascara bark and belladonna root. The microscopist stated that rhubarb, as well as all the other named drugs, if present at all are there in such small quantities that no evidence of their presence was seen. As a result of the examination and a consideration of their powerful cathartic action, it is believed that Nature's Remedy is, essentially, aloes or aloin, cascara, and belladonna with, probably, resin of podophyllin (instead of mandrake)—a common cathartic mixture (Journal A. M. A., March 15, 1919, p. 815).

Misbranded Nostrums.—A "Notice o Judgment" has been issued declaring the following nostrums misbranded: Chase's "Blood and Nerve Tablets," "Liver Tablets," and "Kidney Tablets"; XXX Tonic Pills; Egiuterro; Uicure; Sweet Rest for Children; Beaver Drops Comp.; Blood Kleen; Heart and Nerve Regulator; Kidneyleine; Eye Powder; Tanrue Herbs and Pills, and 5 Herbs (Jour. A. M. A., March 22, 1919. p. 883).

Haven's Wonderful Discovery.—The Council on Pharmacy and Chemistry reports that E. C. Havens, Sioux Falls, S. D., requested consideration of a remedy which he claims to have discovered for the cure of influenza. According to the label on a specimen, "This remedy is good for Coughs, Colds, Lung Disease, La Grippe, Influenza, Rheumatism; good for Pains, Cramps, Backache, Lumbago, Neuralgia; for severe pains soak your feet in hot water for 3 nights, add 3 tablespoons of baking soda in water and apply Anti-Flue Medicine to the affected parts." The "discovery" was stated to contain oil of wintergreen, oil of sassafras, oil of black pepper, spirit of camphor, spirits of turpentine, spirit of chloroform, tincture of arnica and alcohol, and was called Havens' Rheumatic Remedy before its supposed effect on "Flue" was "discovered." The Council finds that Haven's Wonderful Discovery is an unscientific, irrational mixture, marketed under therapeutic claims which are unwarranted and without foundation (Jour. A. M. A., March 22, 1919, p. 883).

PROGRESS IN MEDICINE AND SURGERY

A CLINICAL STUDY OF 400 PATIENTS WITH BRONCHIAL ASTHMA. I Chandler Walker, M. D., Boston, Mass. Canadian Med. Ass'n Journal, Feb., 1918. The author aims to present as many useful facts as possible in the determination of the cause and treatment of bronchial asthma. Neither sex, nor nationality nor race played a part in the cause or frequency; occupation played a very slight part. Attacks limited to certain seasons may be important. During the summer months they are usually caused by the protein in the pollen of plants, at other times bacteria are frequently the cause. The length of time the patient has had asthma and the age of onset is important.

Forty-eight per cent of the cases studied gave a positive skin test, that is, were sensitive to some protein. The number of cases who developed asthma under the age of two and between the age of two and five, was as great as at any other age and of these 83% to 90% were sensitive. Four-fifths of those who began in infancy were sensitive, two-thirds of those in childhood, one-half of those during young adult and one-fourth of those during adult life. The relationship between the age of onset and sensitization to different types of proteins was by far most frequent among those who began to have asthma during infancy. The frequency of sensitization to the bacterial proteins was about the same for all ages up to forty years. Of animal emanations the protein of horse hair is the most frequent cause and that of the dog the least frequent cause. The most important point deduced is that of multiple sensitization or sensitization to more than one type of protein—and this is most frequent among those patients who began to have asthma during infancy, quite frequent among those beginning between the ages of two and five, and five and ten, but after these ages it is not very usual.

The treatment of sensitive cases is largely a matter of judgment in deciding which positive test should be first investigated. Those who are sensitive to bacterial

protein may be desensitized by treatment with vaccines. The result of dieting in those sensitized to food proteins and the results of treatment with animal hair, pollen, and bacterial proteins, in those so sensitized have been most successful. W. D. Beadie.

THE CARDIOTHORACIC RATIO: C. Saul Danzer, (Am. Jour. Med. Sc. vol. 157, April, 1919) believes that an increase in this ratio is of great practical importance in detecting slight cardiac hypertrophy or dilatation. After pointing out the importance of detecting slight enlargement in nephritic conditions and cases presenting systolic murmurs, etc., the author shows how absolutely unreliable actual heart measurements are as indicating slight enlargement. There is a normal ratio between heart and chest transverse diameters ranging from the long chest of the status asthenicus with its "drop heart" and the broad chest of the habitus emphysematicus with its broad heart, according to the author. This fact makes it possible to determine in a given case more accurately whether or not a slight enlargement exists.

An X-ray plate is taken of the heart with the tube 6 feet or more from the plate, the patient sitting up and facing the plate. It is important to wait until any rapid heart action incident to the procedure passes by and then to take the picture at mid-inspiration. The right and left heart borders are measured to the mid sternal line and the sum of these two measurements is taken as the heart diameter. The thoracic diameter is taken at the greatest point and measurement taken from the inner border of the ribs. All measurements are taken in cm. and the ratio of heart diameter to chest diameter expressed in per cent. The normal ranges from 39 to 50 per cent with the average about 45 per cent.

"We may summarize as follows: Anything over 50 per cent was regarded as suspicious. If other evidences pointed against the existence of hypertrophy, values up to 52 per cent were regarded as normal. However, 53 per cent and over were considered definitely pathological."

Note: The author goes on to state that a heart hypertrophy or dilatation may exist in a congenitally small heart with this ratio within the arbitrarily set limit of 52 per cent. The thought occurs to the reviewer that there is no reason why a congenitally large heart may not exceed this limit and still be perfectly normal. It is difficult to believe that this cardiothoracic ratio is so exact that a definite figure like 52 per cent can be made to apply as the outer limit for all cases, knowing as we do that the human organism is subject to extreme variations. C. B. Drake.

ROENTGEN-RAY INTOXICATION: DISTURBANCES IN METABOLISM PRODUCED BY DEEP MASSIVE DOSES OF THE HARD ROENTGEN RAYS: Starting in to study X-ray burns and later extending their studies to toxic symptoms developing during treatment (C. C. Hall and G. H. Whipple, Am. Jour. Med. Sc. April, 1919) publish a number of dog experiments with autopsies and extensive conclusions from their findings and the literature.

There is a general constitutional reaction in dogs given lethal or massive doses of the hard rays from the Coolidge tube. This reaction is remarkably constant, a double lethal dose will not modify the clinical reaction.

Following the exposure there is a latent period of 12 to 24 hours or longer, during which time the dog is apparently normal; but actually shows as increased output of urinary nitrogen. Vomiting and diarrhea and prostration then become marked with death usually on the 4th day. The non protein nitrogen in the blood shows a marked increase on the day before death.

Autopsy findings show changes confined to spleen and intestinal mucous membrane. The spleen is small and fibrous and there is mottling and congestion of the intestinal mucous membrane-evidence of epithelial injury in the mucosa. Microscopically the epithelium lining the intestinal crypt may show actual necrosis and invasion of polymorphonuclear leukocytes.

Furthermore, this epithelium shows a remarkable speed of autolysis and may vanish by autodigestion a few hours postmortem.

These intestinal changes may account for the general intoxication and vomiting and diarrhea antemortem.

The toxic symptoms and constitutional effect from X-rays closely resemble those following injections of "proteose" in dogs and may be regarded as "non specific" reactions associated with the destruction of much body protein—such as occurs in intestinal obstruction and acute pancreatitis.

The authors find that the so-called roentgen ray anaphylaxis or hypersensitiveness to a second properly timed exposure (it usually takes 7 to 10 days for reaction to subside and destroyed nitrogen to be eliminated) is unsupported by their experiments. In fact, there is some evidence for a slightly increased tolerance to a second dose.

No evidence found of a roentgen ray nephritis.

Increasing the spark gap increases the hardness of the tube causing greater penetration and therefore greater constitutional reaction and subsequent intoxication.

Lange's idea of an acidosis from cellular degeneration and increased catabolic activity-to account for the toxic symptoms is refuted, and Pfahler's idea of the intoxication being due to the formation of noxious gases in the roentgen ray room from the action of the high tension current is likewise dismissed.

Edsall following the suggestion that roentgen rays may have a stimulating effect on enzyme activity in general and particularly in those cases on the enzymes which produce tissue autolysis, use the rays in unresolved pneumonias and reports excellent results.

C. N. Hensel.

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ORIGINAL ARTICLES

SOME OF THE OLD HOSPITALS OF LONDON WITH SPECIAL REFERENCE TO THE TREATMENT OF FISTULA IN ANO WITH HEMORRHOIDS*

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After the war the American surgeon will probably go to Germany but seldom for purposes of study as compared to his trips there in former years. It has taken this war, with all its horrors, to give us some idea of the working of the Prussian mind, and we must admit that the German scientific propaganda has been a masterpiece. We have gone to Germany in the past and have seen work which we knew had its origin in America, England, France, Italy, or the Scandinavian countries, appropriated, organized, and exploited without credit to the originators. We have accepted such German exploitations at face value, but the time has arrived when we shall make a new start; we shall resent as never before unfair treatment in scientific discoveries, and shall claim for each country credit for those discoveries which rightly belong to it. Yet the American surgeon must not become provincial. There is so much of interest to be seen abroad that we shall in the future visit many countries instead of confining our time to one, as in the past. We shall become more cosmopolitan, and less influenced by German ideas in science, just as we shall free ourselves of the ragged remnants of German ideals.

*Address in Surgery before the Southern Minnesota Medical Association, January, 1919, Mankato.

To the English-speaking surgeon Great Britain offers wonderful scientific advantages. I wish to bear testimony to the honesty and sound sense of the London surgeons—provincial, yes, because in the last generation the English surgeons, as a whole, of whom there have been many charming exceptions, were contented with London, with London methods, with London hospitals, and, too often, with the methods in use in the single hospital in which they served. Shortly before the beginning of the war I had the pleasure of spending some time in London with James Berry, who besides being one of the most learned and able of the British surgeons, has a deserved reputation as an antiquarian. During the pleasant rambles that I had with him around the limits of the old city of London, I learned the why and wherefore of many of her places of historic interest; the reason why sections of the old walled city were given certain descriptive names and why the tower of London, the fortification of William the Conqueror, was placed at one corner of the medieval city so that on one side was the country, on the other, the Thames, thus making it impossible for the turbulent city with its unruly inhabitants to surround the home of the king. The fortification was as much against the Londoners as to protect them from armies on the outside.

It is of interest to recall various descriptive words and derivatives of the names of some of the old London institutions, for example, "bedlam" from St. Bethlehem hospital for the insane, founded in 1297. The word grocer, adapted from engrosser, or wholesale dealer who used the gross weight dates back to the association of the apothecaries and the grocers who separated in 1617. The apothecaries guild, handling medicines and articles of light weight and great value, used the troy pound of 12 ounces.

St. Bartholomew's ,a hospital of great traditions, was founded in 1123, and yet is too young to have a place within the walls of the ancient city of London. Guy's Hospital, St. Thomas' Hospital, the London Hospital, and scores of others have been producing centers of medical science and art for hundreds of years.

The Royal College of Surgeons of England, established in 1800, is not so old as the Royal College of Surgeons of Edinburgh, which was founded in 1505 and which signifies its origin by grant from Henry VIII by using the flat cap which he wore, as part of their academic uniform. Those marvelous specimens numbered in black, and put up by John Hunter's own hands, which have been exhibited in the Museum of the Royal College of Surgeons of London for more than a hundred years, form one of the collections there which has given England one of the foremost positions in the medical sciences for more than a century.

There are many lesser hospitals in London not so old as those I have named, yet much older than any other hospitals in the world, in which special diseases are treated. The Good Samaritan and the Women's Hospitals are examples which have their counterpart in the various women's hospitals in this country. St. Peter's Hospital, devoted to the treatment of stone in the urinary bladder and other urinary diseases, has long been the center of the Urologic School of Surgeons of Great Britain. It is there that Freyer and Thomas Walker work today. The new Brady Hospital in Baltimore, under the able leadership of Hugh H. Young, is the American expression of the same idea in urologic surgery.

Among the most unique and interesting of these pioneer special hospitals, and the only one of the kind with which I am acquainted, is St. Mark's Hospital, founded in 1835, and built for the treatment of fistulas and other diseases of the rectum exclusively. It was here that the great Allinghams, father and son, worked and practised the ligature operation for hemorrhoids. Fistula in ano has been well treated at St. Mark's Hospital for more than forty years. Facts that were known to those working at St. Mark's were apparently given little publicity outside. There have been many different operations for fistula; some of them, especially those used in vesicovaginal fistulas on the general plan of the Whitehead operation and so ably developed by Elting and C. H. Mayo, have been of great value. But for the "common every day" fistula in ano simple successful operations appeared to be forgotten. Any one who has had experience in such cases will remember the humiliation of his own many failures and the number of patients he has seen with incontinence from paralyzed muscles, strictures, and scar tissue lying out along the rectum, all of which were results of surgical interference which not only did not cure but also left a condition more distressing and more difficult of correction than the original fistula.

Many years ago I was so fortunate as to become acquainted, by personal observation, with the methods introduced in St. Mark's Hospital for the repair of fistula in ano, and as a result I can look back on a most satisfactory experience with this particularly annoying variety of infirmity. Edwards,* in an interesting communication, credits Goodsall with most important observations regarding fistula in ano. Goodsall states that if a line were drawn transversely through the middle of the anus, all the fistulas lying anterior to that line would pass directly from the external skin opening to the internal opening inside the anal canal, and that all the fistulas posterior to that line would have their internal opening in the midline of the anal canal, posteriorly, no matter where or how many lateral openings, the so-called horseshoe fistulas, are present. In the anterior fistulas, therefore, the external opening will be found opposite the internal opening. An anterior horseshoe fistula, as Edwards remarks, is practically unknown. The cause of the curved or angular shape of the posterior fistulas, the external openings of which lie laterally and lead by a crooked passage to the internal opening posteriorly, is the arrangement of the coccygeal ligaments and muscle which protect the external tissues lying in the midline posteriorly and direct the pus laterally; the so-called horseshoe tracts and openings are thus formed. It is true that one sometimes meets with very superficial fistulas in which the internal and external openings are in the same line posteriorly, but in such

*Edwards, F. S.; Fistula in ano. Lancet, 1918, cxcv, 673-674.

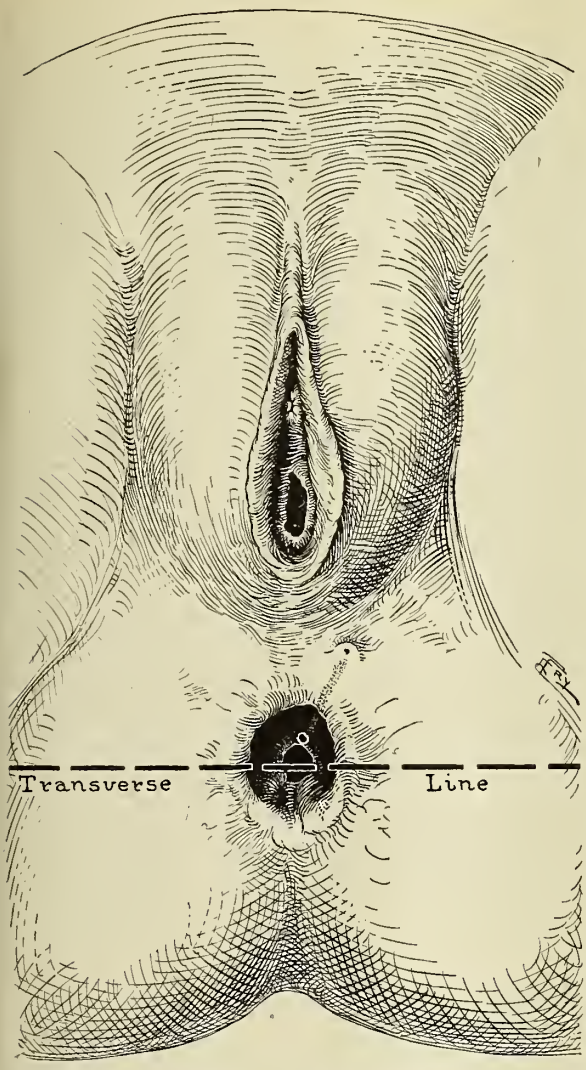

Fig. 1—Fistulas lying anterior to the transverse line; passing from the cutaneous surface directly to the mucosa.

instances the internal opening is external to the sphincter ani just under the mucosa.

The cure of the anterior fistula is quite simple. With the finger in the anal canal and the thumb outside, the induration of the fistulous tract may often be felt. A grooved director may be passed from the external to the internal opening. The tissues, including the muscle, are split through the fistulous tract, thoroughly curetted, and a small piece of iodoform gauze tucked in, so that the trough shaped opening will be compelled to heal from the bottom. Occasionally I have excised the fistula completely and stitched it up satisfactorily.

The treatment of the posterior fistula, which is the troublesome one, consists of carefully following the one or more external openings to the midline posteriorly, where the fistulous tract leading to the internal opening just above the external sphincter will be readily exposed. This is then split through, and the incisions made by following the lateral fistulous tract are joined. After the use of the curet, if the fistulous tract contains much thick scar tissue, the posterior wall of the tract is split to let the blood supply come through. The tract is dressed, similarly to the more simple anterior fistulas, with a strip of gauze, which, however, must be replaced once or twice in the case of extensive fistula to insure that no area of granulation tissue becomes buried. It is not necessary to cut the external sphincter more than at one point, and by no means should the mucous membrane of the rectum be split over the pockets lying above the internal opening. These pockets should be gently curetted and a little piece of gauze introduced: this may be removed in forty-eight hours, and no further packing need be used. If the mucous membrane covering these rectal pockets is split, it often leaves a very troublesome sensitiveness, due to the scar tissue.

At King's College Hospital, in 1862, Henry Smith originated the clamp and cautery treatment for hemorrhoids, a method we have used in hundreds of suitable cases with the utmost satisfaction. It is more than 20 years since I found out how to do the clamp and cautery operation properly by reading in the London Lancet an acrimonious discussion, carried on between Allingham and Smith. Allingham had misinterpreted the description of the clamp and cautery operation, and, after an experience with it as misinterpreted, he had condemned it. Smith denied being the criminal who had described the operation that Allingham had attributed to him; the only wonder to him was that Allingham had not killed more of his patients. Smith then explained why, in doing the hemorrhoid operation with the clamp and cautery, the pile should not be trimmed away with the scissors, because, if the eschar pulls apart, the cut artery, which is most resistant, will bleed as Allingham had described; the pile, Smith stated, should be slowly converted into an aseptic eschar, protected by the desiccated tissues, and the bac-

teria and the hemorrhoid destroyed at the same time. Smith described also how the veins pass downward anteriorly and laterally so that it is seldom necessary to clamp more than in three places, and stated that there should be a half inch of sound mucous tissue between each group of vessels destroyed by the cautery in order not to leave a possibility of stricture. Smith also called attention to the technic of stretching the anal muscles; they must be gently stretched and not lacerated or torn in the dilatation, and thus produce nerve injury and scar tissue deposit. The tube and the pack to lead off the gas is unnecessary; as a matter of fact, it had usually been introduced for fear of hemorrhage because the pile had been cut away before being cauterized, rather than for the object ordinarily ascribed to it. Attention was also called to the necessity of not using the clamp and cautery except in operating on internal piles; external piles and tags should be cut away and the skin defect sutured.

An excellent and most satisfactory laxative for use in cases of wounds and injuries about the rectum, such as those following operations, especially for hemorrhoids, was one prescribed by Van Buren in 1866.*

I trust that this rambling account of a few of the many interesting hospitals of London may help to call to the attention of American surgeons the benefits to be derived from a visit to the medical institutions of the British Isles.

*Magnesii Sulphate,
Magnesii Carbonatis,
Potassii Bitartratis,
Sulphuris Loti aa 30.0.

Sig. two drams more or less as needed at night with glass of milk or water.

DISCUSSION

DR. ARCHIBALD MACLAREN, St. Paul: I have enjoyed this paper very much, indeed. I have always wondered why it was that before the war so many American inventions and scientific ideas had been appropriated by the Germans. I wondered whether I had been mistaken, but as I went down the line, things I knew all about, without the slightest doubt Germany had appropriated and discovered them years after they had been known and described in this country, and we could not help but resent it. Now, we know what their ideas were, and as Dr. Mayo has said, it is doubtful whether many of us will ever go to Germany again for our post-graduate instruction in the years to come. I do not see how any of us could.

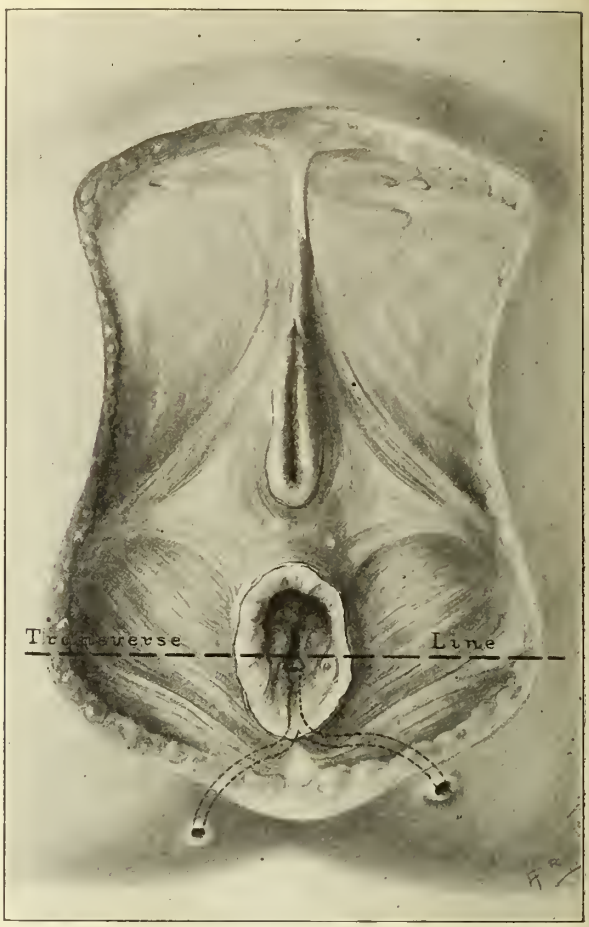

Fig. 2—Only one internal opening in the midline, posteriorly; there may be several external openings.

My recollection of the old hospitals of London is not very clear. I remember very well, however, taking Dr. Fred Lund, of Boston, to his first clinic at Guys Hospital. Dr. Lund is now one of the celebrated surgeons of the world. At that time he had not decided whether he would study medicine or not. He had just completed his course at Harvard, and was one of the international sprinters of the collegiate world. Whether that experience at Guys Hospital induced him to practice medicine or not I have never known. But I remember the pleasure I had in seeing these old hospitals and of being much impressed with the fact that they were much behind American hospitals in many ways, especially the things we all knew so well. But they had that sould foundation and character that Americans most admire, and we as Americans have derived much information from the English surgeons in the last few years.

The ulceration in the mid line of the posterior part of the rectum is very important, and I can look back on several very wretched results because I had not appreciated the importance of not splitting the mucous membrane over the pockets on either side. With the treatment of hemorrhoids I had much the same experience. I followed Allingham's description of his

operation and wondered why under the sun I had so much trouble with the cautery. Not until I saw Dr. Mayo do the operation properly did I understand why there was so much hemorrhage and so many serious results following the clamp and cautery operation after the method of Allingham. From Dr. Mayo's description, Allingham had not described the operation properly. About that time I began doing the hemorrhoid operation simply with catgut, ligating the central vessel and stitching the mucous membrane over it, and I have done a great many of those operations with no bad results, with one exception. In the last case, on which I operated for hemorrhoids, after cutting off the hemorrhoid and stitching it up, there developed pulmonary embolism from which the patient died. The same result will follow occasionally a hemorrhoid operation whether you use the clamp and cautery or the suture.

DR. MAYO, (closing): My first object in presenting this paper is to call attention to what may be seen in the way of sound surgery in the hospitals of London. I did not say much about the provincial hospitals because, as Dr. MacLaren has said, the hospitals in the City of London, until within the last five or six years have not been as good as the hospitals in the provincial cities.

My second object is to bring the technic of the operation of fistula in ano and of hemorrhoids before the association since so many practitioners do these operations. When we go to general medical society meetings we should bear in mind that that a considerable number of men do a certain amount of surgery, and we should not present work to them that only specialists can do, but rather something they can do themselves.

In the third place, and this is extremely important, we have in the past entertained the idea that we must follow Germany in the matter of investigation and research and that the problem must be made as abstruse and dull as possible, such for instance as writing two volumes on the fibrillary contraction of the embryonic frog's heart. We have over idealized the Germans in the belief that they were great because they devoted so much time to this involved style of writing on topics pertaining to the future but with little bearing on the present.

I believe there are opportunities for research in every day diseases which are now largely neglected because we have been striving, in accordance with the German propaganda, to do the things that were very hard to do without fully realizing that they did not amount to much when they were done, and that a lot of valuable time, which might have been better employed, had been wasted.

There are a lot of every-day problems that should be discussed in a general meeting of this character. For instance, the results of operations on varicose veins, or ulcers of the leg, and the various pathologic conditions which we encounter in day by day practice. It seems better to devote more time to week-day diseases and week-day surgery and not to trouble ourselves too much with holiday or Sunday diseases outside of special societies.

HISTORY OF BASE HOSPITAL NO. 26

Lt. Col. A. A. Law, M. C.
Minneapolis, Minn.

During the summer and fall of 1916, in anticipation of the time when the need might be acute, the United States Government decided to organize through the medium of the American Red Cross, fifty Base Hospitals; these hospitals were to have as a mother or parent institution, a large representative hospital or medical school, which would be their sponsor and from which their staff would be recruited.

As originally projected, the hospitals were to be formed for 500 beds, to have twenty seven administrative and medical officers, sixty nurses and 153 enlisted personnel. They were to be equipped with all the things needed by a modern hospital and the money for the purchase of this equipment was to be raised by private subscription. After the hospitals were organized and equipped, they were to be held in reserve as Red Cross Hospitals until such time as the Government might need them when they were to be taken over by the Army and automatically were to become Military Hospitals, their personnel having been previously mustered into the United States Reserve Corps.

The surgeon general asked Dr. W. J. Mayo to organize such a hospital around the Mayo Clinic; Dr. Mayo believed, however that the project was one for the University of Minnesota to sponsor and so indicated. He and Dr. C. H. Mayo promised to co-operate in every way, they subscribed half of the original $30,000 deemed necessary to outfit the hospital and recruited from their clinic or from its graduates, ten medical officers and a like proportion of nurses and enlisted men; the rest of the officers, nurses and men were recruited from the University of Minnesota or the Northwest.

Having had previous service in the Spanish American War and the Philippine insurrection as a medical officer, Dr. Arthur A. Law, associate professor of surgery of the University Medical School was chosen as "Director" to organize the hospital.

Wounded being carried from Hospital train to Base Hospital 26

On April 15, 1917, having received telegraphic instructions from Colonel J. R. Kean, Director general of military relief of the American Red Cross, the organization of Base Hospital 26 was started. The Drs. Mayo, having given $15,000 for equipment, the patriotic citizens of Minneapolis raised a like amount, later far more was donated either as money, ambulances, motors, tools, dental supplies, surgical dressings, etc., bringing the total expenditure close to $60,000; with these resources a very complete equipment was purchased by the purchasing agent, Dr. L. B. Baldwin. Many public spirited merchants sold their wares at practically cost to themselves.

The original corps of officers from the University included Majors Law, White and Staley; Captains Reed, Morrison, Zimmermann, Beard, Baron, Thomas, McGibbon and MacDougall; Lieutenants Clark, Smith, Klingen and Snodgrass. The Rochester officers were Major Moore; Captains Mussey, Rankin, Hayes, Berkman, Bissell, Moore, Fisher, and Lieutenants Szlapka and Melson. Bishop Wm. P. Remington was chaplain. Practically all of the officers received well merited promotions before leaving France, while six of the non-commissioned officers, were made first and second lieutenants in the sanitary corps; these included Shepard, Wash, Driscoll, Morgard, Gilespie and J. F. Shay.

Of the enlisted personnel, many of the non-commissioned officers had been trained on the Mexican border, in regular or National Guard organizations, while eighty per cent of the corps were college men and twelve were senior medical students; this corps represented ten per cent of 1,500 applicants for enlistment, they were a volunteer corps, unusual in their high order of intelligence and ability. The homes of most of the men were in the Twin Cities, Rochester or neighboring towns in Minnesota or adjacent states. The nurses, recruited by Miss Annie Gosman, chief nurse, as well came from the same locality, all were volunteer Red Cross or Army nurses and most of them were graduates of local hospitals.

On June 12, 1917, the hospital was reported to the War Department as fully equipped and ready for service. December 13, 1917, Base Hospital 26 was ordered mobilized in Minneapolis, the corps was quartered on the University campus in Millard Hall of the Medical School and in one of the engineering buildings. December 28, 1917, the corps boarded a troop train and went to Ft. McPherson, Atlanta, Georgia, where Colonel J. H. Ford, of the medical corps of the regular Army took command. While in Atlanta "Unit V" of Dallas, Texas, was assigned to Base Hospital 26; this Unit consisted of ten officers, twenty-three under command of Major Lott, which as well was a volunteer organization of picked

men and women. Here for nearly five months they received intensive training in the duties of hospital administration and those of sanitary soldiers. May 17, 1918, they were ordered to Camp Merritt, New Jersey, and on June 4th Base Hospital 26 sailed from New York on the British ship "Adriatic" in company with eight other transports, convoyed by the British cruiser, "Leviathian." The day before they sailed, German submarines had appeared in American waters and sunk fifteen small vessels off the American coast.

The camouflaged transports put out of New York harbor and to sea with a remarkable escort of scores of sub-chasers, destroyers, a cruiser, five hydroaeroplanes, a dirgible, anchored balloons on shore and a balloon towed by a destroyer; this convoy left sometime during the night, only the cruiser remaining to lead a zig-zag course almost to Iceland, then south to the north coast of Ireland where two days out from Liverpool nine tiny British destroyers appeared over the horizon, one after another, picked us up and convoyed us to Liverpool, through the Irish Sea. By troop train the hospital was taken across England to Southampton and from there across the channel at night and landed at Le Havre, June 18th, just two weeks after leaving America. Here we were joined for the first time by our nurses who sailed in the same fleet but on a different transport and now, altogether we started on a French train for our station at Allery, Soane et Loire. Two days later at Navarre, our nurses were detached and sent back to Blois, forty of the hundred being permanently detached, never to join us again.

Arriving in Allery at the end of three days on a troop train, we found a vast "Center" in the building—a center projected for ten Base Hospitals and convalescent camp for 5,000 men. The ten units for the Base Hospitals were uniform in their layout and physical characteristics. The buildings were of the barracks type, built of sections made in Switzerland and were called Cavanar Barracks. There were fifty-three buildings in Base Hospital 26, twenty being great wards, the rest were storehouses, kitchens, dininghalls, baths, latrines, barracks, quarters for the personnel, officers and nurses, dispensaries, surgical and

Receiving Ward of Base Hospital 26 on a day in August when we received 1000 wounded

X-ray pavilions, laboratories and morgue, receiving ward and administration building. Most of the wards were supplemented by three large tents, placed end to end, directly behind the ward—the bed capacity of each ward with its tents was 118, the bed capacity of the whole hospital was 2,078. This was administered by thirty-eight officers, 100 nurses, 250 enlisted men and seventy-five French civilians.

When we arrived in Allery, a tiny French village, adjacent to the great city of hospital buildings, the United States Engineers and civilian contract labor were hard at work on the Center. Our section, No. 2, was but fifty-eight per cent completed so it became necessary for the personnel to help build our own hospital; this we did, our highly specialized corps men working on the buildings, roads, ditches, plumbing, sewers, wiring, etc., where ever possible helping the engineers in their stupendous task, for we knew this hospital was sadly needed for wounded men.

Of supplies, aside from beds and bedding, ranges and kitchen utensils, there was almost nothing, all we had was the very simple so-called "crisis expansion" outfit which came with the tents. Need ever stimulates invention so the resourceful corps built out of biscuit tins, tubs, sinks and distills, out of roofing material and lumber, bathing slabs; out of empty barrels, a sterilizing plant, while refrigerators were improvised from gunny sacking stretched on frames and kept wet by dripping water. Furniture was made from rough lumber, laboratory utensils from tobacco tins, a hundred and one like ingenious improvised makeshifts tided over the time of need.

Colonel Ford was detached and assigned to the command of the Center so the Director, Major Law, later promoted to lieutenant-colonel, took over the command of Base Hospital 26. Sixty per cent of our own nurses were returned to us on July 4, 1918, and others were assigned from different organizations.

Several operating teams, each composed of a surgeon, his assistant, three nurses (one an anesthetist) and two corps men, were organized—these teams were early sent on observation tours to various evacuations and base hospitals and after July 15th, some of them were always in the advance zone, operating in evacuation, field or camp hospitals. These teams were rotated so they all had an opportunity to work at or near the front.

On July 23, 1918, long before we were ready to receive them, 400 wounded men were sent to us. Our equipment still consisted of the above mentioned "crisis expansion" outfit so if we were to properly care for these men, supplies must somehow be procured.

The Red Cross at Paris was solicited and later responded nobly with two carloads of dressings; in the meantime officers were sent to all the surrounding cities, Dijon, Lyons, Chalon and Beaune where they bought up drugs, dressings, rubber tubing, sutures and anything they could get to aid them. Our own carpenters and metal workers made fracture frames and metal splints and improvised such orthopedic apparatus as was needed. Before we left the States, the loyal, generous friends of the hospital had given us from time to time, sums of money to be used in just such an emergency; this was called the "contingent fund" and all together totaled $24,000. This fund made it possible to buy the supplies so badly needed, without which the wounded could not have been cared for properly. This contingent fund repeatedly stood between us and actual want and always helped increase our efficiency. Early in August, our own hospital supplies arrived from overseas and we were then equipped as few hospitals in France were with every modern agent needed for diagnosis and treatment of the sick and wounded.

As the great July and August offensive progressed, we rapidly filled our 2,100 beds, one day receiving 1,000 wounded, on another 600, all brought to the Center on the splendid American, British or French hospital trains, most of the patients having already been through the evacuation hospitals at the front and reaching us in from eighteen hours to four days from the time of being wounded.

Other base hospitals were arriving by now, No. 25 from Cincinnati, No. 49 from Omaha, Nos. 56, 70, 97 organized at large, Evacuation 19 operating as a base hospital, while from the staffs of all the hospitals, Provisionl No. 1 and No. 2 were organized as an emergency. A convalescent camp under canvas for 5,000 men was also functioning. Quar-

termaster, bakery, military police, transportation and stevedore companies arrived as did an Italian labor batallion, all of which including the sick and wounded made the Center a city of 25,000 souls.

Base Hospital 26, being the first on the ground and the first equipped, was designated as a surgical hospital and received for the first two months the major surgical cases; other hospitals were designated as Centers for contagious, venerial, nervous and mental, eye and ear cases and their staffs were reinforced to handle the specialties designated. As the war progressed, the number of casualties increased until we were obliged to convert the Red Cross buildings and some of the dining rooms into wards to care for the great influx of wounded and sick, so to the day of the signing of the armistice, November 11th, Base Hospital 26 and all the rest of the Center worked to the limit of their capacity for the relief of sick and wounded soldiers. Our own casualties consisted of the loss by death of Lieutenant Klingen and by discharge for disability of Lieutenants Smith and Carlysle.

After the armistice, the hospital was rapidly evacuated, many officers ,men and nurses were detached for special duty elsewhere, some of the senior officers including Lieutenatn-Colonel Law, Majors Moore and White, Captains Morrison and Zimmerman, were ordered home.

On January 7th, 1919, the Hospital received its preliminary orders to prepare to return home; it turned in its property and packed up to leave Allery. It did not leave, however, until March 5th, when it was sent to Nantes, there to be held until ships were available.

In returning to the United States the Unit was split up, the nurses sailing on one ship, fourteen officers on another, while Major Rankin and three officers brought the men home on still another, each detachment landing at a different home port late in April.

Many of the corps elected to remain abroad with the Army of Occupation; others receiving their discharge to enter the Red Cross or to go to the Universities in France, England and Scotland.

The hospital itself splendidly fulfilled its developmental intent, through its wards passed 7,200 sick and wounded men. With its fine equipment, its devoted doctors, nurses and corps men, each and every one having done their full duty, the hospital made an enviable record in the A. E. F. and was an important factor in relieving the suffering of thousands of soldiers it was privileged to serve. In successive wars, the gallant soldier sons of the State of Minnesota have graven a proud record on the tablets of history; now this great hospital voyaging across the seas on its errand of mercy has added new laurels to those won by sons and daughters of earlier wars.

RESULTS OF THE SURGICAL TREATMENT OF SPINAL CORD TUMORS.*

A. W. Adson, M. D.,
Mayo Clinic.
Rochester, Minn.

Too frequently patients suffering from a spastic paraplegia are given a diagnosis of transverse myelitis, sclerosis or lues without a thorough neurologic examination, and thus are deprived of surgical treatment. Sir Victor Horsley, in 1887, was the first successfully to remove a spinal cord tumor (a fibromyxoma). Since then our information concerning such tumors and allied lesions has increased materially. The surgical technic has improved and the mortality has decreased, but the prognosis will become more favorable as we learn to make earlier diagnoses and become more capable in differentiating spinal cord tumors from non-surgical lesions.

I am presenting herein a series of sixteen cases for the year 1917 in the Mayo Clinic in which laminectomies were done for spinal cord tumors. The cases represent fairly well the ratio of cord tumors to allied conditions, and the results accomplished by surgical treatment.

The history of patients with spinal cord tumors is not always constant, but it is suggestive and gives the first clew to the possibilities of such a lesion. The onset of symptoms is gradual, usually beginning with sensory disturbance, that is, paresthesia or anesthesia, accompanied by motor disturbances. The condition may improve but soon relapses, and the

*Presented before the Annual Meeting of the Minnesota State Medical Association, August 29-30, 1918, Duluth, Minn.

symptomatology is gradually progressive with a loss of sensibility and motor function in association with exaggerated reflexes below the cord level. The rapid progress of the disease depends on the position and the type of the tumor. The soft neoplasms, and neoplasms of the intramedullary type usually follow a very slow course, while the hard, encapsulated tumors producing considerable pressure, cause a marked paralysis in a few months, with much more permanent damage to the cord than is caused by the softer tumors. Tumors pressing dorsally on the cord will produce sensory changes before motor disturbances appear. Those situated laterally or anteriorly will more likely produce a Brown-Sequard's syndrome with motor disturbances.

All patients with a suspicious history should be given a thorough neurologic examination, as diagnosis depends on such findings. The reflexes are disturbed in the region of the lesion, and are increased below.

Tumors of the spinal cord arising from the vertebrae or the meninges situated extradurally or subdurally, produce pressure on the cord without invading it. Those arising within the cord itself produce a destruction of the grey matter and later a destruction of the medullated fibres. Such tumors may appear in any portion of the vertebral column or spinal cord; a greater number occuring in the thoracic region, than in the cervico-dorsal and the dorso-lumbar regions, respectively.

The pathology of these tumors varies considerably, but depends directly on their origin. Those arising from the vertebral column will be of a type that comes from bone and fascia, and those arising from the meninges will be endotheliomas, fibromas, psammomas, etc. Such tumors, as a rule, are not very large; they are slow in their growth, and while a certain number are malignant, the larger percentage are benign, which favors an ultimate cure if removal is effected in time. Before discussing the results of operation I shall present the history of an illustrative case:

Case (A-211097), W. A. M., a male, aged 30 years, came to the Mayo Clinic Ocotber 14, 1917, complaining of inability to walk. The patient had had diphtheria and scarlatina when a child, la grippe occasionally, and tonsillitis in January of 1917, and in February he noticed difficulty in walking and in controlling his legs. This condition gradually grew worse until June, when he was unable to get about without assistance. He consulted a physician, and it was found that he had lost sensation in the left leg, and that the right knee jerk was greater than the left. When he presented himself at the clinic he had a great deal of difficulty to stand with the assistance of crutches. There was an absence of sensation in the feet. The cranial nerves and the spinal nerves down to the sixth dorsal segment were negative, but below this point there was a definite loss of pain, tactile and temperature senses though it was not complete in the first two segments. Reflex findings were: epigastrics—4 on a scale of 4; abdominal reflexes—4; cremasterics on both sides—4; hamstrings on the right inner—3; outer—4; left inner hamstring—2, and the outer normal. The knee jerks on the right were exaggerated 2 on a scale of 4, the left were normal; the Achilles were normal on both sides; in the plantar only a slight response; doubtful Babinski signs on both sides and Oppenheim and Gordon signs both negative.

The patient went home for a few days and returned on the twenty-ninth of the month with a slight exaggeration of symptoms and with less ability to walk; he was unable to stand with the aid of crutches and had to resort to a wheel chair. The blood Wassermann and the spinal Wassermann tests, the Nonne test, and X-ray of the dorsal spine were negative. In view of this history we felt that there was a slight possibility of a chronic meningitis, but inasmuch as the patient presented a definite cord level, we advised exploration of the sixth dorsal segment. October 31 a laminectomy was performed, and the spines and lamina of the fourth, fifth, sixth and seventh dorsal vertebrae were removed. The dura was opened, exposing a large tumor situated subdurally but extramedullarly over the right lateral and dorsal portion of the cord opposite the fifth and sixth dorsal vertebrae. The tumor which was about one inch in width and thickness, one and one-half inches in length, and firmly adherent to the dura, was enucleated with very little difficulty and found to be a psammoma. The post-operative convalescence was uneventful and rapid, and in twelve days the patient was able to stand supported by his crutches. At the end of three weeks, he was able to walk with the assistance of one cane, and from that time until December 20th, improvement was so rapid that he could go back to his regular work. There was a marked improvement in the sensory changes, as well as a definite return of the motor function. The patient was examined February 2, 1918, at which time all sensations had returned, except over the sacrum and in the region of the scar. The disturbance over the sacrum was extremely slight, 1 on a scale of 4, and the motor function was normal. Since then the patient has been drafted and has passed his physical examination, as fit for army service. He is, however, carrying on his regular work, as we believe it advisable for him to defer his service in the army for at least six months.

RESULTS OF THE SURGICAL TREATMENT OF SPINAL CORD TUMORS

Case	Age	Sex	Neurologic Diagnosis	Surgical findings	Location	Level	Duration of illness	Recovered	Improved	Unimproved	Death	Remarks
Mr. W. A. M. 211097	30	M	Spinal cord tumor	Psammoma	Subdural but extramedullary	Thoracic	10 mos.	Yes	—	—	0	Rapid improvement.
Mrs C. A 205482	57	F	Spinal cord tumor	Psammoma	Subdural but extramedullary	Thoracic	2 yrs.	Yes	—	—	0	Rapid improvement.
Mrs. W. M. 190590	40	F	Spinal cord tumor	Glioma	Subdural but extramedullary	Thoracic	3 yrs.	—	Slight bladder control	—	0	Slow improvement. Had Cystitis.
Mrs. J. B. P. 207649	45	F	Spinal cord tumor	Psammoma	Subdural but extramedullary	Cervico Thoracic	3½ yrs.	Yes	—	—	0	Moderately rapid improvement.
Mr. C. L. 199461	35	M	Spinal cord tumor50% Myelitis 50%	Psammoma	Subdural but extramedullary	Thoracic	7 yrs.	—	Slight bladder control	—	0	Slow improvement.
Mr. W. D. 201297	45	M	Spinal cord tumor	Fibroma	Subdural but extramedullary	Cervical	3 yrs.	—	Marked 10 mos. Relapse	—	0	Reoperated Pressure on cord due to developing lordosis.
Mrs. S. E. D. 207513	55	F	Spinal cord tumor	Psammoma	Subdural but extramedullary	Dorsal	2 yrs.	—	Marked	—	0	Rapid improvement.
Mrs. T. E. Y. 208580	42	F	Spinal cord tumor 75% Myelitis 25%	Angio-neuroma	Extradural	Dorsal	6 mos.	—	Marked	—	0	Slow improvement.

8 Tumors removed in 1917:
5 Psammoma
1 Glioma
1 Ongioneuroma
1 Fibroma

7 Tumors were subdural but extr.
1 Tumor was extradural

Three patients recovered; 2 were markedly improved; 2 slightly improved; 1 markedly improved for ten months and then relapsed and was reoperated on. A compression of the cord was found due to a developing lordosis.

RESULTS OF THE SURGICAL TREATMENT OF SPINAL CORD TUMORS

Case	Age	Sex	Neurologic Diagnosis	Surgical findings	Location	Level	Duration of illness	Recovered	Improved	Unimproved	Death	Remarks
Mr. J. J. O. 170611	29	M	Spinal cord tumor. History of lues. Gumma	Angima	Intramedullary	Dorso-lumbar	10 mos.	—	Marker 85%	— —	— —	Improvement slow.
Miss G. H. 202523	21	F	Spinal cord tumor 50% Myelitis 50%	Intra-med. fibroma	Intramedullary	Cervico Thoracic	Onset 7 yrs. 1 yr. marked	—	Slight bladder control	—	—	Improvement slow.
Mr. A. W. E. 130521	41	M	Spinal cord tumor	Intramed. tumor	Intramedullary	Cervico Thoracic	Onset 8 yrs. 18 mos. marked		Slight bladder control	—	—	Improvement slow.
Mrs. M. 206210	32	F	Spinal cord tumor	Unilat. Inflam. mass	Intramedullary	Dorso lumbar	18 mos.	—	—	Yes	—	Drainage of Spinal fluid.
Mr. C. C. 210045	40	M	History of lues with level signs	Gumma	Intramedullary	Dorsal	18 mos.	—	—	Yes	—	
Mr. J. R. W. 182125	46	M	Spinal cord tumor	Meningo-myelitis	Intramedullary	Dorsal	12 mos.	—	—	Yes	—	
Mr. B. 181084	31	M	Spinal cord tumor. Syringo-myelia.	Meningo-myelitis	Intramedullary	Cervico Thoracic	12 mos.	Yes	—	—	—	
Mr. M. O. B. 186135	31	M	Chronic mening. cord tumor. History of mening. 9 yrs. ago	Meningo-myelitis	Intramedullary	Cervical	Onset 9 yrs. 1 yr. marked	—	—	—	Yes	Death 30 hours after operation. Fat embolism.

Two intramedullary tumors; 1 angioma or varicose veins of the cord; 1 unilateral inflammatory tumor; 1 gumma of cord and membranes; 3 meningomyelitis. One angioma markedly improved; 2 intramedullary tumors slightly improved; 1 with inflammatory mass unimproved; 1 gumma unimproved; 1 meningomyelitis recovered; 1 meningomyelitis unimproved; 1 meningomyelitis died.

SUMMARY OF RESULTS OF THE SURGICAL TREATMENT OF SPINAL CORD TUMORS.

Laminectomy with exploration of cord		Recovered	Greatly improved	Slightly improved	Unimproved	Return of trouble	Death.
Tumors removed	8	3	2	2	—	1	0
Tumors not removed but decompressed	5		1	2	2	—	—
Meningomyelitis	3	1	—	—	1		1
Total	16	4	3	4	3	1	1

Percentage of tumors located 83.6; of tumors removed 61.7; of patients recovered 25; of patients greatly improved 18.75; of patients slightly improved 25; of patients unimproved 18.75; of mortality 6.25 per cent. Total percentage of patients improved 68.75; of patients unimproved 31.25.

Operation

The usual type of laminectomy is done through a dorsal midline incision. The spines and laminae, are exposed subsequently removed, since we follow the practice of removing three or four spines and laminae before opening the dura. After controlling the bleeding and exploring the cord, the tumor is removed by gentle manipulation, while extreme precaution is taken not to injure the spinal cord or its nerve roots, or to cause unnecessary bleeding. It is true that a two-stage operation is indicated in a definite percentage of cases, particularly in patients having intramedullary tumors, but if the operative procedure has not been prolonged over an hour or an hour and a half, the operation can be completed in one stage. The dura is closed completely with interrupted sutures of silk; the muscles are closed with two strands of chromic catgut; the fascia with a similar suture; the subareolar tissue with a single strand of plain catgut, and the skin by a subcuticular suture. No drainage is used unless it is necessary to control bleeding with a little pack of gauze. Following the operation, the patient is kept in the prone position on several pillows with the head lower than the spine for a period of from thirty-six to forty-eight hours, after which he is permitted to lie on his side but with one pillow under the trunk, so as to keep the head lower than the line of laminectomy for three or four days. This prevents undue pressure on the suture-line by the cerebrospinal fluid. Occasionally, a little stimulation is necessary but usually nothing more than a rectal saline. Further post-operative treatment depends on the condition of the patient. He is kept in bed for ten days and then permitted to get up for short intervals until he is able to be kept about in a wheel chair. No special splint or dressing is applied on account of the removal of spines and laminae; we believe, however, that the usual laminectomy should be reinforced in cervical cases, as one of our patients returned with a developing lordosis and compression of the cord. Following the operative treatment, we urge the use of massage and passive motion of the affected extremities. The various methods of using electricity offer very little to commend them.

In reviewing our results from the surgical treatment of spinal cord tumors, it was found that sixteen laminectomies have been performed in cases in which exploration was deemed advisable. A clinical diagnosis of a definite spinal cord tumor or a questionable spinal cord tumor had been made. In 13 of the cases we localized spinal cord tumors or inflammatory masses which produced pressure such as that produced by a spinal cord tumor, and 8 of the number were removed. One of the tumors was an angioneuroma situated extradurally; the remaining 7 (5 psammomas, 1 glioma, and 1 fibroma) were situated subdurally but extramedullarly.

Results of Operation.

Three patients recovered after the removal of the tumors, 2 have improved to such a degree that they are able to take up their regular work, although there still is some weakness in one of the extremities. Two are slightly improved; they are able to control bladder and bowels, but are unable to work or go about. One patient improved markedly for ten months and returned to his regular duties, but he had a return of symptoms, and on recent examination and re-operation, we found a lordosis with compression of the spinal cord. There was no recurrence of a tumor but many adhesions had formed and destruction of the cord itself had taken place at the lower part of the curve. This apparently was due to the lack of support, as the cervical vertebrae had separated and slipped forward. The prognosis at this time, naturally, is very poor, even though the patient's convalescence has been uneventful. Improvement always takes place rapidly and recovery is more complete and rapid in cases in which the symptoms have been of short dura-

tion and the paralysis has existed for less than a year. In the 5 cases in which we were unable to remove the tumors, we performed an extensive decompression and left the dura unclosed. Two were cases of intramedullary tumors, 1 a case of degenerative fibroma and the other was so necrotic that a diagnosis was not made. One patient presented a definite history of lues that had been treated without results; he also had a definite sensory level. In view of this, an exploratory operation was done and an angioma of the cord was found which we did not attempt to remove but merely ligated the vessels en masse. The patient has made a steady and progressive recovery, and at the present time is able to go about his regular work. A fourth patient in this group gave a definite history of a unilateral lesion, and on operative exposure a unilateral, infiltrating, inflammatory tumor was found. We were unable to remove the tumor on account of its extensive involvement in the cord itself, and unfortunately the patient has not improved. The post-operative convalescence was complicated by the opening of the wound and the drainage of cerebrospinal fluid on the ninth day. The drainage continued for a week but subsided without any particular treatment except that of placing the patient in the prone position over several pillows and lowering the head, strapping the wound together with adhesive strips, and the application of sterile dressings. In the fifth case of non-removable tumors, there was a definite history of lues nine years previously with a development of a spastic paraplegia and a definite sensory level. Because of our findings, and the negative specific tests, we advised an exploration. A gumma of the cord involving the meninges was found. Again, results were unsatisfactory.

In addition to the operations in the 13 cases of spinal cord tumors, we explored 3 cases in which the lesions were questionable, and found meningo-myelitis, with increased cerebrospinal pressure. The results in the 3 cases were as follows: One patient did not improve, and gradually became worse; the second patient recovered and at present is doing his regular work, and the third died on the second day with a typical picture of fat embolism. This was the only death in the series.

Summary of Results.

In the 16 laminectomies the removal of the tumor was effected in 8. Three of these patients have recovered; 2 have improved greatly, 2 have improved slightly, and 1 has a return of the trouble. There were no deaths. In the 5 instances in which the tumors were not removed, 1 patient was greatly improved; 2 were improved slightly, and 2 were unimproved. One of the 3 patients with meningo-myelitis recovered, 1 did not improve, and 1 died.

	Per cent
Tumors located at time of operation	83.6
Tumors removed	61.7
Patients recovered	25.
Patients greatly improved	18.75
Patients slightly improved	25.
Patients unimproved	18.75
Mortality	6.25
Total patients improved	68.75
Total patients unimproved	31.25

Conclusions.

1. Neurologic examination is essential in all spastic paraplegias.

2. If the patient presents sufficient signs of a cord tumor, he should be given the advantage of an exploration.

3. A certain percentage of patients who have had spinal cord tumors removed recover completely.

4. A large percentage improve greatly.

5. Although improvement is slight in some instances, an exploratory laminectomy is justified on the grounds that one is unable to say, prior to operation, whether or not the tumor is removable.

DISCUSSION

DR. A. W. ADSON, Rochester, Minn.: I wish to emphasize one point of importance and that is urinary retention. It is quite usual for practitioners to begin catheterizing patients as soon as they have urinary difficulty, which is a very common symptom in patients suffering from spinal cord tumors. Dr. Besley, in reporting a series of spinal cord injuries as a result of war wounds, makes the assertion that he has never seen a bladder ruptured from over-distention and his advice is never to catheterize a bladder. In patients with spinal cord tumors, we find that this same principle is always true, but in a few patients the pain from an over-distended bladder is so severe that we are compelled to relieve them by catheterization. Consequently, when it is necessary to catheterize such pa-

tients the catheterization is immediately followed by an irrigation of the bladder with 3 per cent boric acid solution or .5 per cent solution of silver nitrate. If there is some cystitis present, two drams of 20 per cent argyrol are injected into the bladder following the irrigation. This is left in the bladder until the next catheterization. In conjunction with this, we prescribe sodium phosphate and urotropin in doses of 7.5 grs. of each, and have the patient take the phosphate and urotropin at alternating periods of ten days each. The purpose of taking this extra precaution following catheterization is not so much to treat the cystitis as it is to prevent a cystitis, which, if present, frequently results in an ascending infection and becomes a serious factor in the ultimate cure of the patient.

HEMOLYTIC ICTERUS—A REPORT OF TWO SPLENECTOMISED CASES

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Looking back five short years we behold between the patient with pernicious anemia and a probable early demise ascending and descending drop doses of Fowler's solution—our total offering. To the patient afflicted with myelogenous leukaemia we gave iron pills and a solemn verdict of death within two years. A system disease we said—nothing to be done for you. To the unhappy victim of chronic hemolytic jaundice we gave the doubtful consolation of "what can't be cured must be endured."

Such were our offerings of five short years ago. Today, while we are still unable to give entirely satisfactory explanations for the relatively splendid results, in a high percentage of patients afflicted with one of the above diseases the fact remains that the results are revolutionary. The patient with pernicious anemia is carried over crisis after crisis into a remission period by repeated transfusions of blood from a suitable donor and when this simple procedure threatens to fail us if the case presents favorable aspects we have splenectomy to offer with prospects of at the very least a substantial remission. To staid and straight-laced internists and pathologists, the application of splenectomy to myelogenous leukaemia sounded like rank heresy. But the intrepid surgeon of this relatively unconventional middle west, who first applied this remedy, has a faculty of seeing beyond the rules of the past—and he won. Today after preliminary reduction in the size of the huge leukaemic spleen by radium, splenectomy gives the patient a splendid outlook, to those uninitiated astounding. The victim of chronic acholuric jaundice is as if by magic made free of his unsightly icterus and his splenic burden by one stroke. So prompt and decisive are the results that splenectomy for the severer forms of this disease constitutes one of the most gratifying of surgical proceedures.

Elliot and Kanavel in July 1915 in a review of the literature reported 48 splenectomies for hemolytic jaundice, including their own detailed case. From that date to the present, Friedman, Brewer, Larimore, Peck, Goldschmidt, Elliot, Hill and Griffin have contributed a total of 23 cases. Of these 23 cases Giffin reported by far the largest and best studied series. To this total of 71 I wish to add 2 making a total of 73 to date. The early operative mortality has been reduced from 16% to 4.1%—lower than in any other condition requiring splenectomy. Without exception in the 70 patients surviving the operation, the jaundice disappeared in from 3 days to 3 weeks. The anemia usually moderate, but occasionally severe, inproved rapidly or more slowly but consistently without a recurrence except in 2 reported cases. Aside from these two all were reported recovered from 4 months to 27 years after the interference. A common complication was gallstones. Not infrequently did their presence, revealed by severe biliary crises lead to attack on the gallbladder erroneously regarded as the primary factor. Urobilin was present in the urine in all cases. Bilirubin never except transiently during an attack of stone colic. The stools were cholic. In a a few cases the blood serum pigment content was studied. Bilirubin was found frequently; urobilin once only. Duodeual pigment studies were done quantitatively in 13 patients. By the spectroscopic method in 8 patients, including our two. Of the 8, six were studied both before and after splenectomy. The average preoperative values in Giffins' 6 patients was 3150 units, promptly falling to an average of 1425 units at varying periods after splenectomy.

The following brief reports cover our two patients:

Case No. 2499. Alice P., age 13, female, Scandinavian, was referred by Dr. Franzen, March 4th, 1918, with the leading complaint of periodic attacks of vomiting, weakness and epistaxis. Family history reveals no jaundiced members. Past history that of a normal, healthy childhood, with one mild attack of diptheria at the age of seven. Up to two years ago there was no jaundice noted by her associates. Present illness began approximately 2 years ago with severe attacks of vomiting associated with extreme lassitude but no severe pain and followed by distinct jaundice. Weakness increased, food distress and distention followed gradually. One year ago and off and on since there has been epistaxis. During the past 3 months the vomiting has been more frequent and the jaundice deeper. Physical examination revealed a well nourished, jaundiced child, with no purpura. The liver was palpable at the costal margin; the spleen a hand's breadth below the rib edge. An estimated length of 18 cm was arrived at by percussion and measuration. No enlarged veins in abdominal wall; nor fluid in the abdomen. Blood findings: Hg. 49% Sahli; R. B. C., 2,904,000; W. B. C., 4,500. Differential count: P. M. N., 60%, L. L., 15%; small L., 24%; Eosinophiles, 5%. Anisocytosis marked. Bulk of red cells measuring 5 and 6 m. Resistance test: complete hemolysis at 0.36%. Wasse.man not done. Urine: no bilirubin; urobilin and urobilinogen in large amounts. Duodeual contents were secured on two separate occasions, one week before and the day of operation . Contents dark, chocolate color; urobilinogen 0; urobilin, 4,400 units. HH index, 1.2; Splenectomy by Drs. Franzen and Dunsmore on April 10, 1918, was uneventful. Spleen weighed 950 gm. The pathological report made by Dr. Bell reads: "Considerable fibrosis throughout, large numbers of eosinophiles, sinuses usually very small, lymphoid follicles some enlarged, others decreased in size by encroachment of the fibrous changes." On April 19th, 8 days after, the jaundice had entirely disappeared and the urine was free of pigment. On April 25th, 15 days after: blood findings: Hg. 58 Sahli, R. B. C., 3,975,000; W. B. C., 12,000. Duodeual contents of same date: 50 cc obtained, light yellow in color; Urobilinogen 0, Urobilin 1,200 units (normal). This little patient is reported well 6 months after the interference.

Case No. 2723. Mrs. F. S., female, age 25, married, Danish descent, housewife, was referred by Dr. Iver Severson on June 6th, 1918. Her chief complaint, chronic jaundice and periodic attacks of headache, prostration and abdominal distress of indefinite character. Family history is entirely without bearing. Past history that of normal childhood except beginning at about the age of 10 she was subject to attacks of headache, nausea and vomiting without colic lasting a day or two. These would occur four to six times a year. At 15 she began without abrupt onset to be jaundiced, at first slightly so, but always deeper during each so-called bilious attack. Beginning at 16 and ending at 19 more frequent attacks occured of much severer character—namely, colicky and followed by tenderness in the epigastrium and right hypochondrium. She married at 22. Eight months ago she was delivered prematurely of a seven months' conception because of severe toxemia of pregnancy. Since this event she has been even more jaundiced and weaker, but free of colic attacks. Physical examination: medium well nourished, normal type, normal circulatory apparatus, rather deeply jaundiced skin and mucous membranes. No scratch marks. (However patient states that from her 16th to 19th year there was itching of the skin). Liver not palpable. Spleen 6 c. m. beyond costal border, hard, notched edge. Percussion, length 16 c. m. Blood findings: Hg 60 Sahli, R. B. C., 2,758,000; W. B. C., 18,150. Differential: P. M. N., 83.5% L. Lymph. 7.5%; small L. 8.5%. Transitional and eosinophilis .5%. Morphology of red cells: microcytosis, otherwise negative, complete hemolysis at .45% nacl. Autoagglutination present. Wasserman negative. Urine: dark brown color; bilirubin none; urobilinogen and urobilin heavily present. Duodeual contents removed 6/18/18. Very dark brown. No biliary casts or pus. Urobilin, 9,600; urobilinogen, 16,000. Patient splenectomised and gall-bladder removed by Dr. Severson on 6/10/18. The latter was atrophic and contained a half dozen ovoid, soft, pigment stones, the largest having lodged in the neck of the bladder. The spleen, free of blood, weighed 580 gm. It proved to be

somewhat adherent. The pathological report is similar to that of case one, with perhaps added fibrous changes. On Aug. 19, 1918, patient presented herself for examination. She is free of jaundice dating from a few days post-operative. Her blood findings yield Hg. 70 Sahli (normal) R. B. C., 4,750,000; W. B. C., 6,760. Urine clear and free of pigment. Duodeual test urobilin, 1,400; urobilinogen, 600.

Discussion: Both of our cases are of the acquired type, both definitely ill aside from the cosmetic disturbance. Both exemplify very well the splenic crisis—headache, prostration, vomiting and deeper jaundice. During such an attack in another patient I have been able to establish a distinct enlargement of the spleen. In the second patient the presence of gall-stones was announced by biliary crises distinctly more painful and sharper in nature. It is important to keep the distinction in mind. Pregnancy added to the liver's burden with the resulting toxemia. That the liver shares in the pathology of this state has been quite definitely established by Litzenbergs' studies. In both patients the high duodeual pigment values clinched the diagnosis and indicated the spleen. In the second patient we anticipated a good deal of direct liver pathology because of very high value of urobilinogen. This patient is regenerating liver cells rapidly but even today, 60 days after ablation of the splenic burden has not entirely repaired the damage, for while urobilinogen has fallen from 16,000 to 600 units, its presence even in this amount indicates a residium of hepatic cell functional pathology. It is conceivable that this patient if left unrelieved, would in time have developed a biliary cirrhosis. Urobilin the pigment characteristically increased in the bile in hemolytic icterus shows normal values in the first patient 2 weeks and the second 8 weeks after splenectomy.

In conclusion, I agree with C. A. Elliott's summary, towit:

1. Splenectomy is a cure for hemolytic icterus.
2. The mortality is 4.1%.
3. Severe cases should all be operated.
4. Gallstones, complicating 60% of the cases should be removed later.

DISCUSSION

DR. E. T. F. RICHARDS, St. Paul: Dr. Schneider has shown the advance which has been made in the therapy of hemolytic icterus, and brought out particularly that it was in the acquired form that splenectomy is indicated.

In the congenital type of hemolytic icterus it is very much of a question whether splenectomy is of value. Very frequently, in this type the individual is not made uncomfortable by the presence of the condition. There is slight jaundice, and very often in the congenital type there may be very slight splenomegaly. The individual may live indefinitely. In the acquired form, crises, evidently of splenomegalic origin, associated with increase of jaundice, pain and increase of the anemia, are typical.

So that with the facts on record of 75 cases, splenectomy is definitely indicated in that particular type.

We can make a clinical diagnosis of hemolytic icterus very definitely on five findings: The Jaundice, the splenomegaly, the diminished osmotic resistance of the red cells, the urobilinuria and the anemia. We can put it into a definite group. We can say that we have a case of hemolytic icterus; but unfortunately, like so many other of these curious syndromes, we are no further advanced in the etiology of hemolytic icterus. It may be in the blood. The origin may lie in the liver, it may lie in the spleen.

In the acquired form it would seem that the spleen is most often at fault, and certainly the spleen is the main factor in the progressive anemia, and as Dr. Schneider has so well brought out, the results are extremely gratifying through splenectomy.

In a case which we had an opportunity of studying at the University Hospital, of the congenital type, in a woman of 23, who had been jaundiced from infancy, there was a history of recurring attacks of an epigastric nature, with pain and vomiting, as Dr. Schneider has brought out. At the patient's request a laparotomy was performed, and to our surprise, no gall stones were found in the gall bladder. That was out of accord with the majority of findings, where gall stones are associated with this condition. It would seem that gall stones in the gall bladder itself are merely incidental; and it is quite universally agreed that the gall bladder itself has no part in the etiolgy of hemolytic icterus.

DR. E. L. TUOHY, Duluth: I do not feel qualified to discuss this paper because I have never had any experience with hemolytic icterus.

My first comment on his paper would be to commend his extraordinarily clear enunciation and delivery. For the sake of the Society this is something we should all attempt to emulate.

We have had more experience with splenectomy in an effort to cure or ameliorate the condition of pernicious anaemia. However, we have done no splenectomies for this disease within a year. As Dr. Schneider suggests, there may be a few suitable cases for this procedure, and a fatal crisis may be averted; I do not believe, however, that a cure will ever be obtained by this operation.

The indirect value of a study of the duodenal contents, as shown by Dr. Schneider, is very great, particularly in the study of malignancy at or near the pylorus; the differentiation of pathological processes existing in the head of the pancreas, the ampulla, or in the ducts themselves.

I have observed one case in which splenectomy had been done for a myelogenous leukemia. A curious enlargement of the lymphatic tissues elsewhere in the body soon supervened.

Indirectly, the work which Dr. Schneider has elaborated in the study of the duodenal contents, I consider of very great value. It is not only that it gives data in those instances where you desire a better knowledge of spleen activity, but it helps a good deal in differentiating certain types of malignancy, particularly as it affects the ampulla or the descent of the ducts at the head of the pancreas; you are anxious to know whether you are dealing with a type of prolonged jaundice that is primarily of malignant origin or not.

What he brings out concerning the value of splenectomy in myelogenous leukemia is excellent. I have the data on one case, in which the spleen had been removed, but in which a curious enlargement of the lymphatic tissues elsewhere soon supervened.

The fact that these cases of hemolytic icterus are all cured would point, it seems to me to another feature of interest. Possible if we could get at the real caues of pernicious anemia early enough and push it far enough back, before the bone marrow or other tissues that are intimately concerned in pernicious anemia were affected, something like splenectomy might have cured them

I congratulate Dr. Schneider on having had these two cases and on having brought them to the attention of this body.

SOME PHASES OF THE NEW CHILDREN'S CODE OF INTEREST TO PHYSICIANS*

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In the summer of 1916 Governor Burnquist appointed a Child Welfare Commission of persons who served without compensation, for the purpose of studying the social needs of children—especially the dependent, neglected delinquent, and defective children. The Commission was composed of lawyers, judges, social workers, state officials, women interested in public affairs, and others, and it was presided over by a thorough scholar, able jurist and gentleman—Judge E. F. Waite of Minneapolis, who in his capacity as district judge, acts also as judge of the juvenile court. After several months of deliberation, the Commission reported forty-one bills to the legislature, and of these, thirty-five were enacted into law. The legislature had passed at one sitting what is, to quote an eastern authority, "the greatest single body of progressive laws relating to children which will be found anywhere in this country." The commission proceeded on three fundamental principles:

1. That a child is entitled to be born into the world sound in mind and body.
2. That he is entitled to the fullest opportunity for growth and development consistent with his capacity and circumstances of life.
3. That he should have protection against his own anti-social tendencies and correctional restraint when necessary.

To sum it all up, the state must assume full responsibility for the well-being of the dependent, defective, delinquent, and neglected child, just as the state now cares for those of its citizens who cannot care for themselves —the insane, the feebleminded, the pauper, the indigent sick—a well-known principle of law and society and one which doctors frequently apply in their very large numbers of cases for which they do not expect or receive compensation. In such cases the doctors are of their good will performing a state function only imperfectly performed by the state.

It is not my purpose at this time to review in detail the new child welfare legislation, but rather to consider quite briefly some phases of the laws of special interest to physicians. The state's responsibility on the social side for uncared-for children of all classes has been centered in the State Board of Control and in the various county child welfare boards, of which there are now about forty in the state. All the laws have been constructed upon this base of central and single administration.

First, the defective child—more narrowly, the feeble-minded child. Physicians have long been aware of the increasing numbers of feebleminded persons and of the totally inadequate state provision for them. They have roamed the community, reproducing their

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kind, filling brothels, jails, almshouses—a burden and a menace of ever-increasing proportions. Physicians have also learned, to their dismay, that a feebleminded patient could not be sent to Faribault against the will of parent or guardian, nor could the patient be kept there, if sent, longer than the parent or guardian would permit. Our present law is an improvement. It provides that a feebleminded patient may be committed, through the probate court, to the state's care under compulsion and without his own consent or that of his parent or guardian. The law, while contemplating a thorough mental examination when necessary, recognizes that compulsory detention by the state must be based upon the existence of possible harm to the community. A feebleminded person is defined as one "so mentally defective as to be incapable of managing himself and his affairs and to require supervision, control, and care for his own and the public welfare." Conduct in the community is the basis for state interference. But such conduct must be the result of mental defectiveness; therefore let me emphasize here the wisdom of careful and thorough mental examination by a skilled examiner in all cases save those where mental defect is obviously apparent. Two physicians are usually called at these hearings and upon them devolves the responsibility for making out the papers recording the physical and mental condition of the patient and the social history. This record is of the utmost importance in the future treatment of the case. The records which have come to the State Board of Control are, unfortunately, meager and inadequate in many cases.

The second feature of this law is that patients are not committed to the institution at Faribault but to the care and custody of the State Board of Control. As is well known, Faribault is filled to overflowing, with a long waiting list. We are asking the next legislature for increased institutional care on state lands here in Northern Minnesota, with simple cottage and colony care. Such a plan would mean the cleaning of much land and the fitting of it for agricultural purposes. It would also mean reduced cost in maintenance and happier, busier and more useful lives for the feebleminded. It is greatly to be hoped that the legislature in the stress of the times will not overlook this vital need. Meanwhile patients are being committed to the care and custody of the Board of Control. They are visited by agents of the Board and classified as to urgency of admittance, with special reference to the girls and women of child-bearing age. Some are advanced for early entrance to Faribault; others are placed under parole supervision in the community. A commitment to the Board of Control does not mean institutional care for all committed but only for those who are the greatest menace to the community—commitment does not mean some kind of state supervision for all who are committed. The larger the number of commitments, the greater will be the dramatic force of the demonstration of practical immediate need for increased appropriation from the legislature, both for institutional care and for care outside the institution. I wish this Association might go publicly on record as to the necessity for much enlarged provision for the feebleminded.

May I turn now from the mentally defective to the physically defective for the purpose of calling attention to a very small but important section of the new juvenile court act, which reads as follows: "The term 'neglected child. shall mean a child . . . whose parents or guardian neglect and refuse, when able to do so, to provide medical, surgical, or other remedial care necessary for his health and well-being." Most physicians are familiar with cases of children badly in need of medical care, and the parents, by reason of ignorance or stubborness, unwilling to secure it. Such cases may be brought to the attention of the juvenile court judge on proper petition and the parent can be made to take proper action or the court may appoint a guardian who will do so.

We have considered the child who is mentally or physically defective—what responsibility does the state assume as regards his birth? It is now provided by statute that all maternity hospitals shall be licensed by the State Board of Control A maternity hospital is defined as any person or association, etc., who receive for care and treatment during pregnancy or during delivery or within ten days after de-

livery, more than one woman within a period of six months. This is a broad definition and includes almost every hospital in the state. The license is given to any hospital that is "needed and is for the public good and is conducted by reputable and responsible persons." The Board is empowered to make regulations and to inspect. You will note that this supervision of the Board of Control does not supersede the power of the Board of Health—the former deals with the social phases of the conduct of hospitals and the latter with the health, sanitary, and technical medical aspects. You may well ask what is the need for such widespread regulation. The answer is that with special reference to the illegitimate child and the unmarried mother a few irresponsible physicians and hopsitals have violated all the laws of decency and humanity, and in order to curb the few, the many must submit to general laws of regulation. I am constrained to believe from some direct and a great deal of indirect information, that abortions are being performed in this state in large numbers. I have evidence that in some places in the past a regular traffic in illegitimate babies has been carried on. Unfortunate mothers have been exploited—children born out of wedlock have been passed around like domestic rabbits—sometimes for a purchase price by the peson who took the baby—sometimes the mother has paid to have the baby placed out in a home, and in many cases the home to which the child was taken has not been fit and suitable for bringing up a child. Some homes have been conspicuous for their filth and degradation. I do not refer here to the doctor or hospital that seeks honestly and without thought of compensation to help a mother and her child. I quarrel with the manner in which that help is sometimes rendered but not with the spirit or motive. I am considering here the conscienceless profiteers in human tragedy.

The new law then requires all maternity hospitals to be licensed. It also requires that all births shall be reported to the Board of Control as well as to the health officers, and if the child is illegitimate, that fact is specifically noted on the report blank, or if there is doubt, that doubt is recorded. It is the duty of the Board of Control then, when notified of a woman who is delivered of an illegitimate child, or pregnant with child likely to be illegitimate when born, "to take care that the interests of the child are safeguarded, that appropriate steps are taken to establish his paternity, and that there is secured for him the nearest possible approximation to the care, support and education that he would be entitled to if born of lawful marriage. For the better accomplishment of these purposes the board may initiate such legal or other action as is deemed necessary; may make such provision for the care, maintenance and education of the child as the best interests of the child may from time to time require, and may offer its aid and protection in such ways as are found wise and expedient to the unmarried woman approaching motherhood."

Now, to prevent the promiscuous barter and sale of babies and to make the transfer of rights and duties in children at least of equal dignity with the transfer of inanimate real or personal property, the law provides that no child, under any circumstances, shall be transferred from one person to another until a court of law has so ordered and the transfer is a matter of judicial determination and legal record. The law is as follows:

> "No person other than the parents or relatives may assume the permanent care and custody of a child under fourteen years of age unless authorized so to do by an order or decree of court. Except to a maternity hospital as provided by law, and in proceedings for adoption, no parent may assign or otherwise transfer to another his rights or duties with respect to the permanent care and custody of his child under fourteen years of age, and any such transfer hereafter made shall be void."

In the case of illegitimate children, this can be accomplished through the juvenile court in private proceedings without exploiting the mother and the child and yet affording each full legal protection. The records in such cases are not open to the public. Too often in the past the father and the mother of an illegitimate child and their respective families have thought only of themselves and of the possible harm to their reputations. The child has been disposed of as best suited the

family desire for secrecy and protection to themselves. The State Board of Control has insisted, in accordance with the law, that the father of an illegitimate child should be made fully responsible—his responsibility is now legally stated to be the same in all things as though the child were legitimate. The child's interest is paramount because he is the one innocent and helpless party. All persons concerned should be aided and protected in every possible way, but everything must be done with the child's interest as the primary consideration. When more men have been made responsible for children of which they are the illegitimate fathers, we may have less illegitimate parenthood or we may not, but at least the child will have that to which he is entitled—a natural father who is legally responsible for his care and education.

Then with respect to the mother and her child—it has been a common practice among people with the best motives and without thought of private gain, to take infants from the mothers at birth. The State Board of Control and the State Board of Health have jointly taken cognizance of this situation and have decreed that the mother shall perform her full maternal obligation at least in the beginning in order that the child may have a real chance to begin life sound and healthy. Following is a joint resolution of the Board of Health and the Board of Control:

"Whereas, the death rate of infants under one year of age is considerably higher among those infants who are artifically fed;

Whereas, the health and well-being of infants under one year of age is dependent in large measure upon proper nursing at the breast by the mother:

Now, Therefore, Be It Resolved, by the State Board of Health and the the State Board of Control that no patient shall be received by any person or at any hospital or institution licensed by or under the supervision of either of said boards on any basis other than that the mother shall nurse her own child so long as she shall remain under the care of said person, hospital, or institution.

Provided, that where nursing by the mother is impossible for any physical reason, exception to the above rule may be made by the State Board of Health, or by the State Board of Control acting upon proper medical advice."

May I briefly summarize in conclusion:

1. Mentally defective children may now be committed, through the probate court, to the care and custody of the State Board of Control—this commitment may be by compulsion where necessary. All such commitments will receive attention by the Board, either by institutional care for the most urgent cases, with special reference to girls and women of child-bearing age, or by parole supervision in the community until institutional care can be provided.

2. Physically defective children can be brought into the juvenile court when their parents will not, when able, secure for them proper medical attention.

3. All maternity hospitals are licensed by the State Board of Control in addition to whatever regulation is provided by the Board of Health.

4. All births in maternity hospitals must be reported to the Board of Control in addition to the Board of Health, and a statement must be made as to legitimacy.

5. Rights and duties in a child can only be transferred by order or decree of court—usually the juvenile court.

6. Fathers of illegitimate children should be made fully responsible, and mothers must nurse their babies while under the control of the hospital and as long thereafter as is possible and necessary.

Minnesota Medicine

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EDITORIAL

THE INFLUENZA EPIDEMIC

The Influenza Epidemic of the fall of 1918 has just about burned itself out after exacting a toll of Europe and America comparable to the plagues of India or China. These latter we have read about at various times but not considered perhaps very important because they were quite distant.

The weekly reports of the Census Bureau at Washington for February and April show a very marked reduction in the fatalities attributed to Influenza. The mortality, however, is still several times that of a year ago. It is interesting to note that in many of the larger cities reported, the number of deaths due to pneumonia is much below that of a year ago when the diagnosis of Influenza was not so strongly suggested to the physician. This fact suggests that many cases of pneumonia are now being diagnosed as "Flu" when they are primary pneumonias. The differential diagnosis is often difficult but the sudden development of definite signs of pneumonia within two or three days of the onset should distinguish most cases of simple pneumonia from influenza. The occurence of other cases in the same family often gives the cue to the presence of the epidemic condition.

We know that in any epidemic the cases occuring towards its end are less severe. The mortality statistics do not therefore, indicate accurately the morbidity in the influenza situation today. There is undoubtedly still a very considerable amount of la grippe if we are entitled to distinguish this milder condition from the severe influenza.

The variation in opinion regarding the etiology of la grippe or influenza is a sure indication of our ignorance of the bacteriology of the disease, a most remarkable situation when we consider the massive amount of time and thought spent on the subject. The truth is that we do not know the cause nor the mode of transmission of this scourge.

NEW RED CROSS ACTIVITIES

The Red Cross Society was originally founded to care for the sick and wounded during war times. During the recent war although this was primarily its function much suffering was prevented and relieved in civilian communities throughout the world by the spreading of information and the application of well established methods for restricting disease.

With a view towards continuing these civilian activities and extending still further this field of its activities, Mr. Davidson, president of the American Red Cross, called a meeting of representatives of the national societies of Great Britain, Italy, France, Japan and the United States, which was held in Cannes, France in April of this year.

In an address given at the American Red Cross Headquarters at Washington on May 2nd, Sir Arthur Newsholme, K. C. B., M. D., recounted the conclusions reached at this International Conference.

The conference held a number of general meetings in which the general policy was discussed and then divided itself into sections dealing with preventive medicine, child welfare, tuberculosis, malaria, venereal diseases, nursing, information and statistics.

It was agreed that the new work of the Red Cross would naturally divide itself into two parts; an International Bureau and National Organization. The Bureau would act as a great

center for collecting information on various health subjects, digesting it and distributing it by means of publications. The central bureau would co-operate with the national societies, in the main each nation supporting its own national organization.

It is not proposed to compete with activities already being carried on along these lines by other agencies public or voluntary.

Aside from "the momentous decision to endeavor to retain mobilized the forces of Red Cross organizations and to secure their assistance in the great impending struggle against disease, no final decisions have been made."

The Red Cross announces that a resolution embodying this broadening of activities has been adopted by Red Cross leaders in the above mentioned nations and will be submitted to the congress of Red Cross societies to be held in Geneva thirty days after peace is declared.

Just as the Red Cross has been doing for the soldiers what in most instances should very properly have been done by the government, it is now embarking on a new program which should long ago have been provided for by the federal government.

There are certain activities which a Federal Department of Health could take care of to the inestimable good of the nation, activities which city and state health authorities can not handle. Is there any good reason why we should not have a federal department of health and a cabinet secretary? Is it not absurd that a farmer is now able to obtain more information from the government about the care of his hog than about the care of himself? This federal department would act as a central information bureau for individuals, municipal and state sanatarians and health officers. It would control national sanitary problems such as the manufacture and sale of medicine, serums and vaccines, the regulation of rivers from a sanitary standpoint, the standardization of medical reports and vital statistics, the nationalizing of medical board examinations, etc. Such a farce as that of the patent medicine would never have been possible with such a department. Even Dr. Brady might not be necessary.

In the United States Public Health service we see some hopeful sign of the beginning of a Federal Health Department. It had its beginning in 1798 when Congress passed an act for the relief of sick and disabled seamen. The Marine Hospital Service became in 1902 the United States Public Health and Marine Hospital Service and in 1912 the United States Public Health Service, still a branch of the Treasury Department.

While the Public Health Service was largely active in and about cantonments and military camps at the beginning of the war in September 1918 a war program was announced whereby public health activities were to be nationalized in the way of disease prevention, sanitation and public health education. This program will inevitably widen the scope of the activities of this organization and will include some of the activities which a Federal Health Department would control.

As Sir Arthur Newsholme pointed out in his address at Washington it is the purpose of the Red Cross to co-operate and supplement already established agencies, municipal, state and federal. He states very truly that in a representative government it is our own fault that the public health is not adequately cared for often because of insufficient appropriations.

This new departure on the part of the Red Cross Society if approved by the convention to be held at Geneva is a step in the right direction and should result in a vast amount of good. It will undoubtedly lead to the moulding of public opinion to a conviction of the necessity of work of this character and it is to be hoped will lead eventually to the establishment of the proper federal department to handle such work.

CHANGES IN EDITORIAL STAFF

At a recent meeting of the Editing and Publishing Committee an offer made by Dr. J. T. Christison, St. Paul, to conduct the section of this paper under Progress in Medicine and Surgery was promptly accepted. The policy of making the gist of valuable articles appearing in periodicals other than the A. M. A. Journal available to our readers will be carried out under Dr. Christison's direction.

At this same meeting the appointment of Dr. Charles B. Drake, St. Paul, as temporary editor of Minnesota Medicine was approved, effective April 1, 1919.

TERMINATION OF THE GENERAL MEDICAL BOARD AND MEDICAL SECTION OF THE COUNCIL OF NATIONAL DEFENSE

In view of the termination of the war activities of the General Medical Board and Medical Section of the Council of National Defense, Secretary of War, Newton D. Baker, who, as Chairman of the Council, appointed the members of the General Medical Board, has written a personal letter to each of the seventy-five prominent physicians and surgeons comprising the Board, expressing appreciation for their services and thanking them on behalf of the government. Dr. Franklin Martin, Chairman of the General Medical Board has also written thanking the members of the State and County Committees which for two years have worked under the direction of the Board.

"In terminating the relations between these organizations and the officials with whom they co-operated and worked so effectively," said Dr. Martin, "while one cannot complain that the war is over, yet a feeling of regret must inevitably arise at the severing of such close connections engendered by the friendship and comradeship that are the natural outgrowths of such important associations."

Secretary Baker's letter:

WAR DEPARTMENT
Washington.

My Dear Doctor:

Dr. Franklin Martin advises me that the work of the General Medical Board of the Advisory Commission of the Council of National Defense is now nearing completion and that the board will be dissolved on April 1st.

I cannot permit the occasion to pass without expressing my grateful appreciation of the work which you have done and the singleness of spirit with which your associates and yourself have devoted themselves to the great work which was placed in the hands of the General Medical Board of the Council of National Defense. While it would be invidious to make any appraisal of the work of your board in comparison with that of any other agency organized in the emergency, I need not, I know, assure you that the government appreciates deeply and genuinely the great and essential contribution which has been made by the Medical Board in the mobilization of the civilian profession, its classification as to specialties and fitness, and in the preparation and organization of information which would enable the Department to secure from the manufacturers of the country vitally necessary instruments and supplies for medical care and attention of our men in the field.

Since the cessation of hostilities the work of the Board has been rounded out to completion. I beg you to accept for yourself and your associates this expression of my deep appreciation of the service which you have rendered to the country. Cordially yours,

NEWTON D. BAKER,
Secretary of War.

Dr. Martin's letter to the members of the State and County Committees:

COUNCIL OF NATIONAL DEFENSE
Washington.
March 25, 1919.

From: Chairman, General Medical Board, Council of National Defense.
Subject: Termination of War Activities.

Upon the signing of the armistice on November 11, 1918, the strenuous war time activities of the committees of the Medical Section of the Council of National Defense automatically ceased. As the unfinished business in the hands of the committees at that time is now approaching completion, you are hereby notified of the termination of your war duties as a State Committeeman on April 1, 1919.

Not until the history of our part in the great war is written will the people realize the important role the medical profession of the United States played in making our country a deciding factor in winning the war. Do you realize that in the year before our entry into the conflict the commissioned officers in the Medical Departments of the Army and the Navy numbered less than five hundred in each service and that practically 40,000 civilian doctors had been added to these two Corps by the time hostilities had ceased? When the story is told of the enrollemnt of these thousands of doctors, it must give the largest credit to our many state and county committees who labored so patriotically and continuously to carry out the recommendations of the organization under which they worked,

the Council of National Defense, and thus aided the administrative departments of the Surgeons General of the Army, the Navy, the Public Health Service and the Provost Marshal General.

The work of these committees under the direction of the General Medical Board had to do with activities of which the following is a brief summary: Recruiting medical officers; standardization of medical and surgical supplies; co-operation in controlling venereal diseases; mobilizing five thousand dental surgeons; establishing committees on hygiene, sanitation, general surgery, orthopedic surgery, ophthalmology, otology, rhinology, and laryngology, general medicine, nursing, women physicians and medical schools; organizing medical advisory boards; the study of industrial medicine; securing through legislation increased rank for reserve medical officers; and finally, individual classification of the members of the profession through the medium of the Volunteer Medical Service Corps.

I want you to know that those of us who have had the responsibility of organizing and enrolling the medical profession and resources appreciate the value of your work and thank you for it from the bottom of our hearts. This includes the Secretary of War who presides over the Council of National Defense, the Secretary of the Navy who is one of its members, and the President of the United States, who appointed the Council and on two occasions has said, in speaking of our state and county committees: "Will you not be kind enough to convey to them a message of sincere appreciation from me of their services as authorized governmental agencies? . . . The health of the Army and the Navy and the health of the country at large is due to the co-operation which the public authorities have had from the medical profession."

Finally, in sending this communication to you after our two years of stressing work together, I want to thank you personally for your ever prompt response to my calls for help and for the evidence you have always shown me of your loyalty, fidelity and friendship.

Yours very truly,

FRANKLIN MARTIN,
Chairman, General Medical Board,
Council of National Defense.

TERMINATION OF THE VOLUNTEER MEDICAL SERVICE CORPS

Characterizing the work of the Volunteer Medical Service Corps and the Medical Section of the Council of National Defense as "a very striking demonstration of the American spirit," Dr. Edward P. Davis, president of the Corps, paid tribute to the patriotism of American civilian doctors at the final meeting of the Central Governing Board of the Corps held in Washington, March fourteenth, prior to the termination of its war time activities April 1.

A report submitted at the meeting showed that nearly 70,000 applications have been received from physicians for membership in the Corps, of which 56,540 had been received and coded prior to the signing of the armistice, November 11, 1918. Qualifications of these civilian doctors, classified and coded on cards, will be placed in the Library of the Surgeon General of the Army, where they will be accessible to all governmental departments for all time to come. With the approximately 40,000 medical officers additional, who are in the Army, Navy and Public Health Service, practically all the able-bodied, eligible doctors of the country will be listed, available for the nation's needs. Usually there are said to be about 150,000 physicians in the United States, but this total includes a large proportion of superannuated, disabled or ineligible.

Dr. Franklin Martin, Chairman of the General Medical Board of the Council of National Defense, expressed his warm appreciation of the co-operation he has received from the medical profession of the country and his firm belief in the value of the records of the Volunteer Medical Service Corps.

Dr. Davis said, in part: "This Volunteer Medical Service Corps and the work of the Medical Section of the Council of National Defense has been a very striking demonstration of the American spirit in more ways than we have imagined. I have always thought of a remark made by the President when the whole thing was in full swing, just about the time the nation had gotten its stride. He said that the men who were staying in this country were having the hardest time. That was true. You take the medical men who

actually went into service. Of course, some of them did office work in Washington, but the men whom I know who have been in the camps here—whether they got to Europe or not—say they have had the time of their lives.

"One man, my assistant, said: 'I am just coming back from a year's freedom from responsibility, except for the immediate performance of my duties.' Another man, who is probably the best X-ray man in the Army, said his career in the Army has been the happiest time he has ever known, because he has worked scientifically without interruption. They had the privilege of being free to concentrate their minds on duty, and I think the remark made by Dr. Studdiford in New York the other night is to the point—that there has not been in the past year in the practice of medicine in the United States one single easy, pleasant, satisfactory thing. He said he hoped he would never have to live to go through another such year.

"When you consider the burden thrown upon the profession of this country by the shortage of resident membership, taking away assistants, nurses, laboratory men; the influenza epidemic, with the consequent increase in morbidity and mortality, and the strain upon the population which is now showing itself—it has been a most hectic war season. I don't think any profession has met a similar crisis in civilization as nobly as did the American profession, and no small part of the moral value and success of the profession was due to this Corps. The fact that we had a Corps where the men could record themselves who did not go to the front had an enormous moral value.

"I personally desire to testify to the pleasure it has been for me to do what I have done. And I have sincerely appreciated the honor which has been given to me."

To about 13,000 doctors whose applications for membership in the Volunteer Medical Service Corps had been received before the armistice was signed but which had not been acted upon by their state committees, now dissolved, Dr. Davis is sending the following letter:

From: Volunteer Medical Service Corps,
Council of National Defense.
To: Applicants for membership.

1. With the cessation of hostilities subsequent to the signing of the armistice, the Council of National Defense, under which the Volunteer Medical Service Corps was organized, asked that the activities of that Corps be terminated, and Surgeon General Ireland of the Army requested that the valuable records of the Corps be given place in the Library of the Surgeon General where they will be maintained permanently for reference by the various Government bureaus.

2. Your application for membership in this Corps, we regret to say, was not acted upon by your State and County Committees before those Committees were automatically released and, therefore, we are unable to complete your membership by furnishing you with the visible evidence of your tender of service, viz., the insignia and certificate of the Corps. We wish you to know, however, that your patriotic offer of service to your Government has been received and your qualifications as outlined on the Volunteer Medical Service Corps application blank have been transferred to permanent code cards which are to be preserved as an important record of the war.

3. We also wish you to know that those of us who have had the responsibility of organizing and enrolling the medical profession of the country appreciate the value of your offer of service and thank you for it from the bottom of our hearts. This includes the Secretary of War, who presides over the Council of National Defense which authorized the Volunteer Medical Service Corps, the Secretaries of the Navy, the Interior, Agriculture, Commerce and Labor, the members of the Council, and the President of the United States who appointed the Council of National Defense and who definitely approved the Volunteer Medical Service Corps in the following words: "I am very happy to give my approval to the plans which you have submitted, both because of the usefulness of the Volunteer Medical Service Corps and also because it gives me an opportunity to express to you, and through you to the medical profession, my deep appreciation of the splendid service which the whole profession has rendered to the Nation with great enthusiasm from the beginning of the present emergency."

4. Finally, may I express to you on behalf of the Central Governing Board of the Volunteer Medical Service Corps its personal thanks for your generous response to its request for an offer of your services at a time when it appeared they would be so urgently needed by the nation.

EDWARD P. DAVIS, M. D.
President Volunteer Medical Service Corps.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS—PHYSICIANS LICENSED TO PRACTICE MEDICINE AT THE APRIL 1919 EXAMNATION

BY EXAMINATION

Brown, Edwin Stuart, U. of Pa., 1917.
Cochran, Joseph Plumb, P. & S. N. Y., 1918.
Daniels, John Horton, P. & S. N. Y., 1918.
Eisler, Edwin Roy, U. of Ill., 1919.
Gruenhagen, Arnold Phillip, U. of Ill., 1919.
Gunby, Paul C., Harvard, 1918.
Haines, Samuel Faitoute, Harvard, 1919.
Henderson, Arthur Justin Godtfred, U. of Ill., 1919.
Mattick, Walter Lester, Cornell, 1911.
Milan, Maurice George Albert, Georgetown U., 1913.
Perlstein, Isidor, Harvard, 1912.
Quackenbush, Walter Kendrick, Albany Med. Coll., 1895.
Silver, Horatio Z., Miami Med. Coll., 1900.
Sturre, Julius Richard, U. of Minn., 1918.
Tork, Abraham Phineas, Albany Med. Coll., 1911.

THROUGH RECIPROCITY

Bowers, Harry Elbert, U. of Ill., 1914.
Bussen, Leonard H., U. of Minn., 1902.
Clifton, Theodore Ardsley, Long Island Coll. Hosp., 1910.
Fisher, Lawrence Frederick, Rush, 1914.
Gowdy, Ralph Averill, Chicago Coll. Med. & Surg., 1917.
Larson, Andrew George, Am. Med. Miss. Coll., 1904.
McKechnie, Wilfred, Queens, 1902.
McNutt, John Roscoe, U. of Michigan, 1916.
Pepinsky, Rae, Roxie Brenner, Miami, 1908.
Schoonmaker, Guy Daniel, Vanderbilt U., 1917.
Van de Erve, Hubert, Rush, 1905.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

AMERICAN MEDICAL ASSOCIATION MEETING

The annual meeting of the American Medical Association to be known as the Victory Meeting is scheduled for June 9-13, 1919. It will convene at Atlantic City, The delegates for Minnesota are Dr. Geo. D. Head of Minneapolis and Dr. W. H. Magie of Duluth. The American Medical Journal for May 10, 1919, gives in detail the program and all information necessary for the benefit of those considering attending.

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

The mid-summer meeting will be held June 23 and 24 at Rochester, Minn., and not June 30 and July 1, as has been previously announced. Dr. Willy Meyer of New York, Dr. Arthur Dean Bevan of Chicago, Dr. John Prentiss Lord of Omaha, and Dr. Robert Jones of Liverpool, England, will appear on the program.

OFFICERS

John Williams, Pres., Rochester, Minn.
W. E. Sistrunk, 1st V. P., Rochester, Minn.
W. J. Richardson, 2nd V. P., Fairmont, Minn.
H. T. McGuigan, Sec., Red Wing, Minn.
G. F. Merritt, Treas., St. Peter, Minn.
William Whitford, Official Reporter, Chicago.

ANNOUNCEMENTS

Mid-Summer Banquet at Armory Hall Monday, June 23, 8:00 P. M.
Ladies are invited. Courtesy Drs. W. J. and C. H. Mayo

Dr. W. J. Mayo will entertain the members of the Southern Minnesota Medical Association and Ladies at Luncheon Monday, June 23, at the residence. 12-30 to 2:00 P. M. Autos will leave for the residence at 12:15 to 12:30 P. M.

Dr. C. H. Mayo will entertain the Southern Minnesota Medical Association and Ladies at Luncheon at Mayowood, Tuesday, June 24, at 12-30 to 2:00 P. M. Autos will leave for Mayowood at 12-15 to 12:30 P. M.

Dr. Willy Meyer of New York, Doctor Arthur Dean Bevan of Chicago and Mr. John G. Bowman of Chicago will speak at the Evening Session Monday, June 23, Armory Hall, 8:00 P. M.

Physicians are requested to bring their ladies.

Headquarters at Armory Hall.

All papers are limited to ten minutes. This rule does not apply to invited guests.

The President reserves the right to change the order of papers.

Application for membership and payments of dues, Secretary's desk.

IMPORTANT

The attendance will be large and it is imperative that you send in your reservation cards for yourself and your friends at once.

Monday, June 23rd, 8:00 A. M. to 1:00 P. M.

SURGICAL CLINICS

ST. MARY'S HOSPITAL:

Room 1.—Dr. C. H. Mayo—8:00 to 10:30 A. M.
Dr. A. C. Hedblom—10:30 to 1:00 P. M.
Room 2.—Dr. W. J. Mayo—8:00 to 10:30 A. M.
Dr. V. C. Hunt—10:30 to 1:00 P. M.
Room 3.—Dr. E. S. Judd—8:00 to 1:00 P. M.
Room 4.—Dr. D. C. Balfour—8:00 to 10:00 A. M.
Dr. J. C. Masson—10:00 to 1:00 P. M.
Room 5.—Dr. W. E. Sistrunk—8:00 to 1:00 P. M.
Room 6.—Dr. J. deJ. Pemberton—8:00 to 1:00 P. M.

SURGICAL PATHOLOGIC CLINIC

Dr. W. C. MacCarty.
Dr. A. C. Broders. Dr. O. C. Melson.
Dr. A. E. Mahle.

COLONIAL HOSPITAL:

Orthopaedic Surgery—Drs. M. S. Henderson and H. W. Meyerding.
8:00 to 12:00 A. M.

WORREL HOSPITAL—8:00 to 12:00 A. M..

Surgery of the Nose, Throat and Ear.
Drs. H. I. Lillie and R. A. Barlow.
Laryngology, Oral and Plastic Surgery.
Drs. G. B. New and C. M. Clark.
Ophthalmic Surgery.
Drs. W. L. Benedict and A. D. Prangen.

MAYO CLINIC.

X-ray Demonstration on Stomach Diagnosis.
Drs. R. D. Carman and A. B. Moore. 11:00 to 12:00.

A complete list of operations will be published and available at the Armory Hall at 8:00 A. M. each morning.

MONDAY, JUNE 23rd, 1912, ARMORY HALL, 2:00 P. M.

SCIENTIFIC PROGRAM

1. Army Pschologic Tests.
   Dr. Arthur Sweeney, St. Paul, Minnesota.
2. Therapeutics in Cardiac Disease.
   Dr. S. Marks White, Minneapolis, Minnesota.
3. Some Phases of the Goiter Question.
   Dr. H. S. Plummer, Rochester, Minnesota.
4. Benign Xanthic Extra Periosteal Tumor of the Extremities Containing Foreign Body Giant Cells.
   Dr. A. C. Broders, Rochester, Minnesota.
5. The Clinical Course and Pathology of an Obscure Ostitis Causing Loose Bodies in Joints.
   Dr. A. R. Colvin, St. Paul, Minnesota.

Discussion by—Dr. M. S. Henderson, Rochester, Minn.

6. The Uterus at the Menopause.
   Dr. Ernest Z. Wanous, Minneapolis, Minnesota.

Discussion by—Dr. Leda Stacy, Rochester, Minnesota.

7. The Treatment of Urethral Caruncle.
   Dr. John Grenshaw, Rochester, Minnesota.

General Discussion.

8. Results in a Series of Mastoids; Operations for Acute and Subacute Mastoids.
   Drs. Lillie and Barlow, Rochester, Minnesota.

General Discussion.

9. The Early Diagnosis and Treatment of Acute Inflammations of the Eye.
   Dr. E. W. Benham, Mankato, Minnesota.

General Discussion.

MONDAY, JUNE 23, 1919

Dr. W. J. Mayo will entertain at luncheon the members of the Southern Minnesota Association and ladies at The Residence, 12:30 to 2:00 P. M.

Autos will leave St. Mary's Hospital, Colonial Hospital and Worrell Hospital 12:00 to 12:15 for The Residence at Eighth Avenue S. W. and Fourth Street S. W.

MONDAY, JUNE 23, 1919—8:00 P. M.

Evening Session—Armory Hall.

BANQUET

Courtesy of Drs. W. J. and C. H. Mayo

Hospital Standardization.
John G. Bowman, Chicago, Illinois, Director American College of Surgeons.

The Medical and Surgical Treatment of Gastric and Duodenal Ulcers.
Dr. A. D. Bevan, Chicago, Illinois.

Discussion by Dr. W. J. Mayo, Rochester, Minnesota.

Air-Tight Thoracic Drainage.
Dr. Willy Meyer, New York City, New York.

Discussion by Dr. C. H. Mayo, Rochester, Minnesota, Dr. C. A. Hedblom, Rochester, Minnesota.

TUESDAY, JUNE 24—8:00 A. M. to 1:00 P. M.

SURGICAL CLINICS

ST. MARY'S HOSPITAL:

Room 1.—Dr. C. H. Mayo, 8:00 to 10:30 A. M.
Dr. A. C. Hedblom, 10:30 A. M. to 1:00 P. M.
Room 2.—Dr. W. J. Mayo, 8:00 to 10:30 A. M.
Dr. V. C. Hunt, 10:30 A. M. to 1:00 P. M.
Room 3.—Dr. E. S. Judd, 8:00 A. M. to 1:00 P. M.
Room 4.—Dr. D. C. Balfour, 8:00 A. M. to 10:00 A. M.
Dr. J. C. Masson, 10:00 A. M. to 1:00 P. M.
Room 5.—Dr. W. E. Sistrunk, 8:00 A. M. to 1:00 P. M.
Room 6.—Dr. A. W. Adson, 8:00 A. M. to 1:00 P. M.

SURGICAL PATHOLOGIC CLINICS

Dr. Wm. C. MacCarty.
Dr. A. C. Broders. Dr. O. C. Melson.
Dr. A. E. Mahle.

COLONIAL HOSPITAL:

Orthopedic Surgery—Drs. M. S. Henderson and H. W. Meyerding. 8:00 A. M. to 12:00.

General Surgery—Drs. C. A. Hedblom, V. C. Hunt and J. deJ. Pemberton. 8:00 A. M. to 12:00.

WORREL HOSPITAL. 8:00 A. M. to 12:00.

Surgery of the Nose, Throat and Ear.
Drs. H. I. Lillie and R. A. Barlow.

Laryngology, Oral and Plastic Surgery.
Drs. G. B. New and C. M. Clark.

Ophthalmic Surgery.
Drs. W. L. Benedict and A. D. Prangen, Mayo Clinic, second floor.

Demonstration of Diagnosis by Pyelography.
Dr. F. W. Braasch. 8:00 A. M. to 9:00 A. M.

MAYO CLINIC:

X-ray Demonstration on Chest Diagnosis. 11:00 to 12:00 A. M.
Drs. R. D. Carman and A. B. Moore.

TUESDAY, JUNE 24, 1919—12:30 to 2:00 P. M.

Dr. C. H. Mayo will entertain at luncheon the members of the Southern Minnesota Medical Association and Ladies at Mayowood, 12:30 to 2:00 P. M.

Autos will leave St. Mary's Hospital, Colonial Hospital and Worrel Hospital for Mayowood at 12:30 to 12:15 P. M.

TUESDAY, JUNE 24, 1919—2:00 P. M.

Afternoon Session, Armory Hall

1. Causes of Failure after Operations for Club Feet.
Dr. J. P. Lord, Omaha, Nebraska.
Discussion by Dr. H. W. Meyerding, Rochester, Minn.

2. The Treatment of Carcinoma of the Uterus.
Dr. J. W. Little, Minneapolis, Minnesota.
Discussion by Dr. E. S. Judd, Rochester, Minnesota.

3. Abdominal Adhesions—Etiology and Treatment.
Dr. E. S. Muir, Winona, Minnesota.

4. Studies in Influenza.
Dr. E. C. Rosenow, Rochester, Minnesota.

5. Teeth and Their Relation to Focal Infection.
Dr. Boyd Gardner, Rochester, Minnesota.
Discussion by Dr. V. I. Miller, Mankato, Minnesota.

6. Intracapsullar Cataract Operations.
Dr. W. L. Benedict, Rochester, Minnesota.
Discussion by Dr. William R. Murray, Minneapolis Minnesota; Dr. F. E. Burch, St. Paul, Minnesota.

7. Role of Laboratories in the Practice of Medicine.
Dr. Wm. C. MacCarty, Rochester, Minnesota.
Discussion by Dr. S. Marx White, Minneapolis, Minn.

OBITUARY

DR. JOHN H. SCHROEDER

Dr. John H. Schroeder, Minneapolis, assistant in medicine on the faculty of the University of Minnesota, died at the Minneapolis City Hospital on May 2. Dr. Schroeder came to Minneapolis in 1895, where he attended the public schools and graduated from the University of Minnesota in 1916. He is survived by his mother, five brothers and one sister.

DR. WILLIAM A. HALL

Dr. William A. Hall died at the age of 67 years at his home in Minneapolis on April 12. Dr. Hall was born in New York state and graduated from the Albany Medical College. He came to Minnesota 35 years ago and has been practicing in Minneapolis for the last 30 years. He served terms as president of the Hennepin County Medical Society and The Minnesota State Medical Association. Besides his widow he is survived by a son and a daughter.

DR. E. B. DeGRAFF

Dr. E. B. DeGraff of Alexandria, Minn., died at his home at Lake Darling the first week of April from influenza and pneumonia. Dr. DeGraff had retired from the practice of medicine.

DR. DWIGHT SILLMAN

Dr. Dwight Sillman died at the age of 80 years at his home in Hibbing, Minn. Dr. Sillman came to Hibbing five years ago. He was a graduate of the Hahneman College of Medicine and the New York College of Physicians and Surgeons. He is survived by his wife, five sons and one daughter.

IN MEMORIAM

With the death of Doctor Gustav A. Renz which took place on April 13th, the medical profession of St. Paul mourns the loss of a member who long has been identified with the advances in the science of medicine and whose activities covered a wide field.

Dr. Renz was born near Chaska, Minnesota, on the 8th of June, 1860, later moving with his parents to St. Paul, where he spent his boyhood and lived until his death. His early education was received in the common schools, later graduating from the Central High School of St. Paul. After this he entered the Medical Department of the University of Pennsylvania, from which he graduated in 1884. Returning to St. Paul he at once engaged in the practice of medicine.

After a couple of years in practice, being aware of the marvelous advances which were being made in medicine through the introduction of laboratory methods, he determined to avail himself of the advantages of a post graduate course of study in Europe. While abroad he pursued his studies in France, Germany and Austria availing himself of the opportunities to be had in the large medical centres of Paris, Berlin and Vienna, where he received instruction from the most celebrated teachers of the time, and whose unlimited clinical facilities were at his disposal.

Much fascinated by the rapid strides being made in pathology, after the introduction of bacteriology, he devoted much of his time to the study of laboratory methods. After a couple of years spent in study abroad he returned to St. Paul and engaged in the practice of his profession.

He was an active member of the Visiting Staff of the City and County Hospital from its formation until the time of his death, having served first as Pathologist and later as one of the visiting Gynecologists. For a number of years he was Professor of Clinical Gynecology of Hamline University. He was for several years Director of the Laboratory of the Ramsey County Medical Society, and it was under his direction and supervision that the enterprise of preparation and sterilization of catgut was carried out.

He was a member of the Ramsey County Medical Society of which he was an ex-president, the Minnesota Academy of Medicine, the Minnesota State Medical Association and the American Medical Association.

While not a frequent contributor to medical literature he kept in close touch with recent advances in medical science.

In 1899 he was appointed Assistant Health Commissioner in which capacity he served continually for eight years. Following this he was appointed and served a term of four years as Health Commissioner. After an interval of three years with the adoption of the present city charter, he was appointed Chief Deputy Health Officer in which capacity he continued to serve until the time of his death.

Dr. Renz was held in high esteem by his patients, colleagues and associates. Death came peacefully on the evening of April 13th after a lingering illness of several months, during which he bore his suffering with singular resignation and fortitude, often refusing the temporary relief which drugs alone would give.

Dr. Renz is survived by his widow and two brothers, Otto Renz, Vice President of the Art Engraving Company and Frank Renz, also of St. Paul.

OF GENERAL INTEREST

Dr. W. W. Covell of Colorado will locate at St. Peter, Minn.

Dr. J. A. Kittelson of Glenwood has moved to Starbuck, Minn.

Major R. E. Swanson, Alexandria, Minn. sailed from France, April 11.

Dr Trutna has returned to Silver Lake, Minn., from a trip to Cuba.

Dr. J. M. Gibbons who was formerly located at Ashby, Minn., is now in Oslo, Minn.

Dr. A. E. Ahrens, St. Paul, was recently married to Miss Constance E. McMillan.

Dr. C. W. Paulson, recently discharged from army service will locate at Hartland, Minn.

Capt. Frederick Barrett has returned from Camp Lewis, Washington, to Gilbert, Minn.

Dr. G. R. Allaben of Rockford, Illinois, has joined the Shaw Hospital Staff at Buhl, Minn.

Lt. Col. Staley, St. Paul, recently returned from France and is now stationed at Fort Snelling.

Dr. I. F. Selleseth of Northfield, Minn., has recently been promoted from lieutenant to captain.

Dr. Earl Jamieson of Walnut Grove, Minn. was recently married to Miss Hazel Jones of Mankato, Minn.

Dr. R. C. Lowe, recently returned from military service, will resume his practice at Fairmont, Minn.

Dr. Will Robertson has been discharged from army service and will resume his practice at Litchfield, Minn.

Dr. W. H. Smith who has been caring for Dr. Barrett's practice at Gilbert has returned to Cass Lake, Minn.

Dr. Hugh Slocumb of Belgrade, Minn., was recently married to Miss Hedwig Sund of Minneapolis, Minn.

Dr. J. H. Drake, formerly of the Rood Hospital at Hibbing is now a member of the Chisholm Rood Hospital staff.

Dr. E. J. Huenekens has moved from 803 Physicians and Surgeons Building to 538 La Salle Building, Minneapolis. Minn.

Dr. E. M. Jones, St. Paul, has returned from the Walter Reed Hospital, Washington, D. C., and has opened offices at 817 Lowry Building.

Dr. Harris D. Newkirk has returned from service and has resumed charge of the remedial work of the Hennepin County Juvenile Court.

Dr. L. A. Nelson who has been stationed at Camp Sherman, Ohio, has received his honorable discharge and has returned to St. Paul.

Dr. G. E. McCann has returned to Nevis, Minn., having received his honorable discharge from the medical service in the United States Army.

Dr. J. C. Wilkinson, captain in the medical corps at the base hospital at Fort Sam Houston, Texas, has returned to Red Lake Falls, Minn.

Dr. C. C. Leck has received his discharge from the Post Hospital at Brooklyn and has returned to Austin, Minn., to resume his practice.

Major Wallace Cole, St. Paul, sailed for America on May 8th, after having served two years abroad in the medical corps of the United States Army.

Dr. W. P. Robertson, who has been in the medical service of the United States Navy has been discharged and has returned to Litchfield, Minn.

Dr. Charles Freeman who has been at Camp Dodge has returned and has associated himself with Dr. Paul Cook with offices in the Lowry Building.

Dr. Harlow J. Hanson has located at New London, where his brother, Dr. H. V. Hanson, now a captain in the British Expeditionary Forces, practiced before he went in the service.

Capt. R. H. Monahan returned to International Falls from England where he has spent the last seven months as chief orthopedic surgeon in the Shropshire Military Hospital.

Dr. Bernard Gallagher, who recently received his discharge from the medical corps of the United States Army has rejoined the staff of the Dr. C. T. Granger officers of Rochester, Minn.

Capt. Andrew F. Moynihan of Evacuation Hospital 28, who recently returned from France, has received an honorable discharge from the service and resumed his practice in Sauk Center, Minn.

Dr. Kenneth Taylor of St. Paul has been promoted from Major to Colonel in the medical corps of the American Army and is the senior officer in charge of medical work in the Balkans Palestine and Poland.

Dr. R. N. Jones, who has been stationed at the Army and Navy Hospital, Hot Springs, Arkansas has located at Gaylord, Minn. Before entering the service Dr. Jones was at the Eitel Hospital, Minneapolis.

Dr. A. J. Chesley, Minneapolis, has been appointed head of the public work with the Polish forces. Before entering the service Dr. Chesley was director of the department of preventable diseases of the State Board of Health.

The Minnesota Medical Women's Association is conducting a campaign for funds to support hospitals and doctors in Serbia and the East. Dr. Ida Alexander of Sauk Center, who has returned from overseas, is lecturing through the state. Dr. Auten Pine, St. Paul is state chairman for Minnesota.

NEW AND NON-OFFICIAL REMEDIES

During April the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Non-official Remedies:

Non-Proprietary Articles:

MERCURIALIZED SERUM.
DIPHTHERIA TOXIN-ANTITOXIN MIXTURE.

Abbott Laboratories:

Barbital-Abbott Tablets, 5 grains.

Lederle Antitoxin Laboratories:

Anti-Anthrax Serum (Lederle).
Antidysenteric Serum (Polyvalent) (Lederle).
Tuberculin von Pirquet Test ("T. O.") (Lederle).
Tuberculin Subcutaneous Test ("T. O.") (Lederle).
Tuberculin "B. E." (Bacillus Emulsion) (Lederle).
Tuberculin "B. F." (Bouillon Filtrate) (Lederle).
Streptococcus Vaccine, Polyvalent (Lederle).
Paratyphoid Vaccine (Lederle).
Schick Test (Lederle).
Mercurialized Serum-Lederle.
Diphtheria Toxin-Antitoxin Mixture-Lederle.

NEW AND NON-OFFICIAL REMEDIES

Anti-Anthrax Serum-Lederle.—Marketed in packages containing one 50-Cc. syringe with bulb and sterile needle. For a description of anti-anthrax serum, see New and Non-Official Remedies, 1919, p. 269. Schieffelin and Co., New York.

Antidysenteric Serum (Polyvalent) Lederle.—Prepared from horses immunized against the Shiga, Kruse, Flexner and Hiss types of dysentery bacilli. Marketed in syringes containing 10 Cc. each with sterile needle. For a description of antidysenteric serum, see New and Non-Official Remedies, 1919, p. 269. Schieffelin and Co., New York.

Tuberculin von Pirquet Test ("T. O.") Lederle.—Old tuberculin marketed in packages containing three collapsible wax tubes and three scarifiers.

Tuberculin Subcutaneous Test ("T. O.") Lederle.—Marketed in vials containing 1 Cc. For description of Old Tuberculin, see New and Non-Official Remedies, 1919, p. 277.

Tuberculin "B. E." (Bacillus Emulsion) Lederle.—Marketed in vials containing 1 Cc. For a description of New Tuberculin, see New and Non-Official Remedies, 1919, p. 280. Schieffelin and Co., New York.

Tuberculin "B. F." (Bouillon Filtrate) Lederle.—Marketed in vials containing 1 Cc. For a description of Tuberculin Denys, see New and Non-Official Remedies, 1919, p. 280. Schieffelin and Co., New York.

Streptococcus Vaccine, Polyvalent, Lederle.—A streptococcus vaccine marketed in 5-Cc. vials containing, respectively, 50, 100, 200, 400, and 800,million killed streptococci. For a description of Streptococcus Vaccine, see New and Non-Official Remedies, 1919, p. 291. Schieffelin and Co., New York.

Paratyphoid Vaccine, Lederle.—Marketed in packages of three 1-Cc. vials, one vial containing 250 million each of paratyphoid bacilli A and B, while each of the other vials contains 500 million each of paratyphoid bacilli A and B. For a description of Typhoid Vaccine, see New and Non-Official Remedies, 1919, p. 292. Scheiffelin and Co., New York.

Schick Test, Lederle.—A diphtheria immunity test marketed in vials containing diphtheria toxin sufficient for ten tests, accompanied by the required amount of sterile diluent to make the proper dilution of the toxin. For a description of the Diphtheria Immunity Test (Schick Test), see New and Non-Official Remedies, 1919, p. 305. Schieffelin and Co., New York (J. A. M. A., April 19, 1919, p. 1136).

Diphtheria Toxin-Antitoxin Mixture.—A far more durable immunity against diphtheria can be established with a mixture of diphtheria toxin and antitoxin than with antitoxin alone. The immunity does not appear until a considerable period of time has elapsed, and hence the mixture is not applicable in an outbreak of disease. In general the over-neutralized mixture is preferred. Several doses are usually required to induce immunity. Only those persons who are positive to the Schick test need be immunized, and the progress of the immunization may be determined by the response to this test.

Diphtheria Toxin-Antitoxin Mixture, Lederle.—A mixture consisting of five L+ doses of toxin and 6.25 units of antitoxin. Marketed in vials containing one dose. Three doses are packed in a carton. Schieffelin and Co., New York.

Mercurialized Serum.—A solution of mercuric chloride in normal horse serum diluted with physiological sodium chloride solution. Mercurialized serum is proposed for the treatment of syphilis, particularly the crebrospinal type. It can be used intraspinally and intravenously.

Mercurialized Serum, Lederle.—A brand of mercurialized serum complying with the New and Non-Official Remedies description. It is marketed as Mercurialized Serum-Lederle, Dilution No. 1 containing mercuric chloride 0.0013 Gm. in 30 Cc. and Mercurialized Serum-Lederle, Dilution No. 2 containing mercuric chloride 0.0026 Gm. in 30 Cc. Each is accompanied with an equipment for intraspinal administration. Schieffelin and Co., New York, (Jour. A. M. A., April 26, 1919, p. 1225).

PROPAGANDA FOR REFORM

Dichloramine T and Petrolatum Dressing for Burns.—Torald Sollmann reports that solutions of dichloramine-T in chlorcosane do not protect the large open surfaces of burns against mechanical irritation and access of air. On the contrary, the solution is absorbed by the dressing, which is then glued by the wound secretions and causes pain and injury when the dressing is changed. As a result of a study of the decomposition of dichloramine-T by different solvents, Sollmann proposes the use of an ointment of three parts of surgical paraffin and seven parts of liquid petrolatum as a protective dressing on wounds (burns) treated with dichloramine-T-chlorcosane solution. It may even be used as a basis for a dichloramine-T ointment (Jour. A. M. A., April 5, 1919, p. 992).

Steven's Consumption Cure.—C. H. Stevens, a discredited London quack, has been attempting to exploit Canadian veterans at the Mountain Sanatorium for the treatment of pulmonary tuberculosis at Hamilton, Ont. The nostrum was claimed to contain "Umckaloabo root" and "Chijitse," but the analysis made for the British Medical Association showed it to contain no active drugs except alcohol and glycerin. The following is a brief history of this "cure": In 1904 Stevens was selling "Sacco" in Capetown, South Africa, but got into the courts and found it expedient to leave Capetown. In 1906, Stevens was in Johannesburg trading as the "South African Institute of Medicine" and selling his stuff as "Lungsava"; was twice convicted of violating the law and left for England. In 1907, Stevens was in London selling his "cure," and in 1910 was declared by the courts to be guilty of intentional fraud and his "cure" pronounced a quack remedy. In 1915, Stevens' "cure" appeared in the United States under the name of "U. C. Extract" exploited by the Umckaloabo Chemical Company of New York City. Today, Stevens is attempting to exploit tuberculous Canadian soldiers who have acquired the disease in the service of their country (Jour. A. M. A., April 5, 1919, p. 1018).

Surgical Solution of Chlorinated Soda (Dakin's Solution).—According to New and Non-Official Remedies, 1919, Surgical solution of chlorinated soda may be prepared: 1. By the electrolysis of a sodium chlorid solution. 2. By the action of chlorin on sodium carbonate. 3. By the interaction of chlorinated lime and sodium carbonate solutions with subsequent treatment with either boric acid or sodium bicarbonate to reduce the alkalinity (Jour. A. M. A., April 5, 1919, p. 1081).

Procain Anesthesia.—There is no evidence of latent injury to the dental nerves from repeated injections of procain to control supersensitiveness of the teeth. If an isotonic solution is used and this solution made sterile by boiling, it is not probable that it will be injurious (Jour. A. M. A., April 5, 1919, p. 1022).

Iodex.—According to Pharmacal Advance, a house organ extolling the products exploited by Menley and James, Iodex has all the virtues of free iodin without its drawbacks. The claim that a given proprietary represents all the desirable therapeutic properties of a drug but not its drawbacks has been so often proved unwarranted that the claims made for Iodex should receive scant consideration. The report of the A. M. A. Council on Pharmacy and Chemistry on Iodex included a report from the A. M. A. Chemical Laboratory which showed that Iodex, despite the advertising claims, contains no free iodin;—to be exact, when a test for free iodin was made on five specimens, four yielded only minute traces of iodin, while the fifth yielded none (Jour. Mo. State Med. Assn., April 1919, p. 127.)

Paw Paw Tonic.—An advertisement declared that "Paw Paw Tonic" contains no alcohol, but admits that it contains port wine. A newspaper item details the conviction of a Charlotte, N. C. druggist for selling this tonic to young men who became drunk from drinking it. The counsel for the druggist maintained that if Paw Paw Tonic was taken according to directions, the medicine would not produce intoxication. The jury decided that a "patent medicine" which when taken in liberal quantities will produce intoxication, is an intoxicating liquor (Jour. A. M. A., April 12, 1919, p. 1079).

Proflavin Oleate.—This is stated to be the oleic acid salt of the base contained in proflavin (the soluble sulphate of 3,6—diamino acridine. Proflavin oleate is not obtainable in the United States. Proflavin has been proposed in England for use as a wound antiseptic, but its usefulness has been seriously questioned (Jour. A. M. A., April 12, 1919, p. 1099).

Buttermilk Therapy.—For reliable information with regard to new therapeutic measures and reliable brands of drugs proposed for them, New and Non-Official Remedies should be consulted. This book contains a chapter which discusses the probable value of the Metchnikoff sour milk therapy. The book also describes those brands of preparations which the Council on Pharmacy and Chemistry found to be reliable and exploited decently (Jour. A. M. A., April 12, 1919, p. 1099).

The Advertising of Sal Hepatica.—There are two ways of advertising a "patent medicine"—by direct advertisement to the public and by means of propaganda which will lead the medical profession to acquaint the public with it. Sal Hepatica is advertised by the indirect method (Jour. A. M. A., April 12, 1919, p. 1079).

Collosol Cocaine Not Admitted to N. N. R.—Collosol Cocaine (Anglo-French Drug Co., Ltd., New York) is claimed to be a preparation containing 1 per cent. of cocain in colloidal form and is alleged to possess a remarkably low toxicity. However, the A. M. A. Chemical Laboratory found that a specimen contained not more than 0.4 per cent. of alkaloid; hence it does not have the composition claimed and is in effect misbranded. Further, in England it was conceded that the preparation was not an "absolute colloid" and that the declaration with regard to the percentage of cocain was incorrect (Barger, Dale and Durham reported that a specimen was found to contain but 0.25 per cent. of cocain). Without considering other objections, the Council on Pharmacy and Chemistry declared Collosol

Cocaine inadmissible to New and Non-Official Remedies because its composition was not correctly declared (Jour. A. M. A., April 12, 1919, p. 1094).

Cuprase Not Admitted to N. N. R.—Cuprase, sold by the Anglo-French Drug Co., Ltd., New York, is stated to be a colloidal copper hydroxid containing 0.00121 gm. copper per 5 c. c. ampule. A box of eight ampules is sold by the agents for eight dollars and fifty cents, less 10 per cent discount. The Council on Pharmacy and Chemistry reports that the therapeutic claims made in the advertising are those commonly made for cancer "cures" and are about equally convincing. It declares that some of the claims cannot be too severely condemned in a preparation which at best has only an experimental status. The evidence for the value of Cuprase published by the manufacturers or agents presents only vague generalities and no definite data. On the other hand, the evidence gathered by Weil some years ago permits an estimate of the value of Cuprase, and it is entirely unfavorable. In view of the extravagant and cruelly misleading claims and indefinite statement of composition, the Council voted that Cuprase is ineligible for New and Non-Official Remedies (Jour. A. M. A., April 12, 1919, p. 1095).

Goldenrod and Hay-Fever.—In spring, hay-fever is caused chiefly by the pollens of grasses. The fall, hay-fever in the Northern, Eastern and Southern states is for the most part attributed to the pollens of the ragweeds. In the Pacific and Rocky Mountain states they are replaced by the wormwoods. Scheppegrell has concluded that goldenrod does not cause hay-fever (Jour. A. M. A., April 19, 1919, p. 1162).

Germany and The American Chemical Industry.—The Alien Property Custodian has issued a report which, in part, is devoted to a discussion of the influence which Germany has had on the chemical industry in the United States. It outlines how the German government obtained a practical monopoly in the United States in dyes, fine chemicals and synthetic drugs. The report explains how by-products of the dye works were converted into explosives—trinitrotoluene, for instance—and the advantage which the production of these explosives gave to Germany as a military power. The report explains that in medicinal chemicals very little real manufacture existed in the United States. The report discusses the ramifications of the "Big Six"—the German concerns which controlled the dye industry—in American industrial life and describes how their American branches were shown to be enemy owned and therefore taken over by the custodian. The "Big Six" were: Badische Anilin and Soda Fabrik, Farbenfabriken vorm. Friedr. Bayer and Co., Actien-Gesellschaft fur Anilin-Fabrikation, Farbwerke vorm. Meister Lucius and Bruning, Leopold Cassella, G. m. b. H., and Kalle and Co. Aktien-Gesellschaft. The American firms were: Badische Co. of New York, Bauer Chemical Company, Bayer and Co., (Inc.), Berlin Aniline Works, Casella Co., Farbwekre Hoechst Co., Heyden Chemical Works, Kalle and Company, Merck and Co., Roessler and Hasslacher Chemical Company and Synthetic Patents Co., (Inc.), The report closes with a description of a corporation to be known as the Chemical Foundation, Inc., which is to acquire by purchase the German patents which in the past have formed a colossal obstacle to the American dyestuff industry. The Alien Property Custodian has sold to this company for the sum of $250,000 approximately 4,500 patents (Jour. A. M. A., April 19, 1919, p. 1176).

Anthelmintics.—The earthworm reacts with symptom of toxicity to all clinical anthelmintics just as do the parasitic intestinal worms. This fact has enabled Torald Sollmann to re-investigate the claims long made for certain drugs. Spigelia was found to have rather feeble toxicity, but fresh pumpkin seed and squash seed were quite highly efficient (Jour. A. M. A., April 26, 1919, p. 1228).

Annual Meeting of the Council on Pharmacy and Chemistry.—Among the subjects considered at the recent meeting were: The Council decided to publish at an early date a report on the unscientific and commercial propaganda for nonspecific protein therapy. The Council appointed a committee to study the problems of serum and vaccine therapy with a view of publishing the evidence obtainable regarding both the value of, and also the dangers incident to, the use of serums and vaccines. A special committee was appointed to report on the present status of pollen extracts in the prophylaxis and treatment of hay-fever. The Council adopted a resolution urging legislation which shall require the Public Health Service to extend its control of serums, vaccines, toxins and antitoxins to cover other patent remedies that are used hypodermically or intravenously. The Council passed a resolution that the control of arsphenamine by the Public Health Service shall be continued and the price controlled by the government. The Council decided to describe in a separate section of New and Non-Official Remedies proprietary preparations of therapeutic value which are so exploited as to be inadmissible to New and Non-Official Remedies. A committee was appointed to establish fuller co-operation between teachers of therapeutics and pharmacology in medical schools and the Council. A committee was appointed to determine the present status of radium water therapy (Jour. A. M. A., April 26, 1919, p. 1243).

Veracolate Tablets.—The Council on Pharmacy and Chemistry examined Veracolate (Marcy Co.) in 1915 and found it to be semisecret in composition, unscientific in combination and exploited under unwarranted claims (Jour. A. M. A., April 26, 1919, p. 1245).

Radium Treatment of Arthritis Deformans.—According to New and Non-Official Remedies it has been claimed that radium emanation is of value in all forms of nonsuppurative, acute, subacute and chronic arthritis (syphilitic and tuberculous excepted), in chronic muscle and joint rheumatism (so-called), in arthritis defromans, in acute and chronic gout, etc. Its chief value is in the relief of pain. Curative results seem to be lacking. (Jour. A. M. A., April 26, 1919, p. 1245)

PROGRESS IN MEDICINE AND SURGERY

A NUTRITION CLINIC IN A PUBLIC SCHOOL: W. R. P. Emerson, M. D. (Am. Jour. Dis. Children, April, 1919) conducted what he calls a nutrition clinic in a public school in the crowded East Side New York and demonstrated it was practical during a school regime to secure a sufficient part of the essentials of health to obtain practical results.

These essentials he emphasizes, are the removal of the physical defects interfering with nutrition, inducing the child to take sufficient food at frequent intervals, obtaining good air day and night, preventing fatigue and securing sufficient home control to insure good food and health habits.

The children were given a complete physical examination, weighed and measured, and were divided into six groups for comparison of results. They were weighed each week — diet lists checked and results charted. A half hour rest period in the forenoon was taken, lunches were supplied when necessary and home visits were made with the object of gaining the parents co-operation.

From this study the author concludes that all children should be weighed and measured at the beginning of the school year and once a month thereafter. When they are seven per cent underweight the parents should be notified that these children require special observation. They should be grouped in open air classes and school pressure removed. Rest periods are necessary, lunches should be available, but provision of food is not in itself adequate to solve the problem of malnutrition.

The class method is an effective one—it represents an economy of time and energy for teacher, school nurse, and administration. There is no evidence in the weighing and measuring of these children that malnutrition, if left untreated, tends on the whole to correct itself. The percentage of malnutrition for the older children is no less than that for the young children. It is, then, fair to assume that the nation's list of physically unfit is supplied by this group of malnutrition children in the schools. Its percentage is about the same as has appeared in the Student's Army Training Corps and recruits for the army rated as physically unfit. The school system should not by its disregard of the physical condition of its children increase malnutrition. By weighing and measuring at regular intervals, by securing careful physical examination, by teaching proper food habits and other essentials of health, it should graduate its children physically as well as mentally fit, thus eliminating malnutrition as an unnecessary element of national weakness. P. D. Beadie.

SIMPLE METHOD FOR THE CURE OF PERITONSILLAR ABSCESS: Bilancioni, G., Policlin., Roma, 1918, XXV, 413. Peritonsillar abscesses are rather frequent among soldiers. Three or four attacks a year are not uncommon. Considering the frequency of recurrence the author undertook to determine if the usual methods of operation were not responsible for the inadequate cure. The three methods in use at present are those of Lemaitre, Ruault and Killian.

The anatomic relations are of great importance. If we examined the anterior palatine arch (glossopalatine) we find a fold of mucous membrane which arises from its free margin and extends backwards, passing in front of the tonsil which it partly covers. This fold, which is of great pathologic importance, has a triangular form (plica triangularis of His) and at its apex unites with the palatine arch. Its base disappears in the base of the tongue, while the free margin adheres closely to the body of the tonsil or extends for a variable distance above it, leaving the interstitium interarcuarium of His. Thus the tonsil is to a great extent surrounded by two folds which come from the anterior pillar, the plica triangularis in front and the plica falciformis above. At the upper portion of the tonsillar region, immediately behind the triangular fold, a curved probe may be inserted into a cavity which extends into the soft palate and which has important relations to the tonsil. In this space, the supratonsillar fossa of His, the pus from suppurating tonsils gathers. Some writers hold that in this inflammation the tonsil plays the primary according to others the secondary role. His, Paterson and others believe that peritonsillar abscesses originate in the supratonsillar fossa and in the palatine recess, but it is quite evident that primary phlegmonous tonsillitis is much more common than is generally assumed, but usually gives rise to only inconspicuous abscess or to moderate inflammation which changes to acute follicular or parenchymatous tonsillitis. Generally these benign cases escape the specialist and fall rather in the field of the general practitioner, since the symptoms are confined to enlargement of the tonsils, with scant exudation adhering and protruding from the crypts, edema of the pillars and uvula, and dysphagia and sialorrhea with symptoms lasting four to five days. Suddenly some yellow fetid pus makes its way from the tonsil at some point difficult to notice and the patient feels relieved, and the tonsil is a little less voluminous. When the subjective disturbances are exaggerated, so that the patient can swallow neither solids nor liquids, suffers intense pain and almost suffocates, the fever being high, the neck rigid, there will be observed, if the mouth is opened and the tongue depressed, an enormous swelling in the region of the soft palate, located above the enlarged tonsil and projecting inward and downward. The uvula is intensely edematous and prolapsed. This condition lasts ten to twelve days if not operated upon. This form of angina, which is much more serious than the former, is nothing but an acute follicular tonsillitis which, instead of being localized at various points of the tonsillar body which may open outwardly destroying or perforating the parenchyma, is situated at the upper pole of the tonsil, which is usually well developed, with large crypts, true germ nests, which penetrate deep, at times more than one centimeter, into the interior of the supratonsillar fossa. If a sound is introduced between the uppermost part of the tonsil and the pillars, it will be found that the aperture through which the interior of the fossa is penetrated is often constricted by bands which favor the retention of tonsillar secretions in the

cavity of the fossa. Not rarely the anterior and posterior margins adhere strongly to the respective pillars. The existence of these bands explain why the pus gathers all around the tonsil causing great suffering. The knowledge of these anatomic conditions also explains how an incision from the front, through the soft palate, is often insufficient, failing to reach or only partly emptying the sack behind the tonsil.

To give exit in this form of abscess and, above all, to prevent the relapses due to remain of cryptic tonsilla tissue in the fossa and imbedded in cicatrices, and which within a short time would give rise to a new abscess. the author proposes as a radical cure the extirpation of at least the upper half of the tonsil. Incising the body of the tonsil, the abscess is opened and emptied in toto so rapidly that in half an hour the patient is free from his sufferings. The lower portion of the tonsil may be left in place without harm. There is, in fact, no subtonsillar fossa, as the tonsil at its lower pole is delicate and almost always attached to the neighboring tissues without projecting between the bases of the pillars and the base of the tongue, as is the case at the opposite pole.

—Survey of Head Surgery, Surgeon General's Office.

CARL L. LARSEN.

GUN SHOT INJURIES TO THE KNEE JOINT; SOME SUGGESTIONS WITH REGARD TO THEIR TREATMENT: Wm. Redmond and Walter Galbraith, M. D.'S., Brit. M. J., Nov. 25, 1916. The authors classify types of injury and infection seen, with gunshot injuries to the knee joint. The general treatment outlined depends somewhat as to the type of infection, and the treatment is often based upon the pathological report as to the nature of the fluid in the joint and on the X-ray report.

They classify the types of organisms as follows:

(a) Mild infections—Enterococus.

(b) Moderate Infections—Streptococcus brevis, staphylococcus, bacillus coli, bacillus aerogenes capsulatus.

(c) Severe infections — Streptococcus longus; classification and treatment of injuries.

A. Aseptic, without fracture, area cleaned, wound untouched or opened, small bullets left; large foreign bodies removed if they expect further trouble; mobilizing dressing used.

B. Moderate or mild sepsis without fracture; Joint irrigated with saline one dram 0.5 eusol injected hourly through one or two tubes, one tube acting as a drain; mobilizing dressings.

C. Acute sepsis without fracture; knee-joint opened, two incisions each side of patellar tendon, joint capsule opened, knee irrigated with saline, supra-patellar pouch opened by lateral incisions; eusol injected overy two hours; Thomas splint used.

D. Asceptic with fracture: Removal of missile; knee-joint not touched unless signs of infection; continuous eusol irrigation of the fractured bone.

E. Acute or moderate sepsis with severe fracture; often amputated; sometimes excision of the knee-joint is best treatment; knee-joint left wide open, salt or eusol irrigation; Thomas splint used with extension in slight flexion.

The article is difficult to abstract in complete detail and it is reported only as a preliminary outline fo the work they are doing. C. C. CHATTERTON.

THE TREATMENT OF INCREASED INTRACRANIAL PRESSURE: William Sharpe (Journal of the Med. Soc. of New Jersey, Vol. XV, No. 3, Mar. 1918) states 80% of tumors of the brain are malignant and even though surgically successful removal of the tumor is possible, yet the end results are the same.

Brain abscess usually results from otitis media with its subsequent involvement of the mastoid; the usual site is the contiguous temporo-sphenoidal lobe and less frequently the adjacent cerebellar lobe. As lesions of the cerebellum can be much more accurately diagnosed than those of the temporo-sphenoidal lobe, therefore, if we can rule out cerebellar abscess the site must be the temporo-sphenoidal, especially the right lobe, in a comparatively silent area of the brain in right handed patients.

Formerly the otologist in cases of suspected abscess of the temporo-sphenoidal lobe would puncture the dura in search of the abscess through the dirty infected field of the mastoid as all operations for brain abscess are really exploratory procedures. It is distinctly unsurgical to open the clean subdural spaces and to puncture the cerebral cortex itself through an infected area; if the abscess is not located (and this frequently happens) then the patient runs the big risk of a resulting meningitis and thus the usual occurence—the exitus of the patient. Besides the dura should not be punctured blindly with a knife or puncture needle unless the dura has been opened so that it can be clearly ascertained whether an underlying cortical vessel is present or not—many disasters from the resulting hemorrhage have frequently occured from such procedures. It is much better if the operative incision is made through clean subtemporal area just as in a subtemporal decompression, the vertical incision naturally being used; if the abscess is found then it can be satisfactorily drained through the lower angle of the incision at the base of the skull; and if the abscess is not found then at least a decompression has been performed so that the intracranial pressure is relieved until the abscess may locate itself clinically and the great danger of meningitis and infective meningoencephalitis has been avoided.

Within the last five years the author has examined and treated almost fourteen hundred children having the condition of spastic paralysis. The condition may be due to hemorrhage, to lack of development or to a form of meningoencephalitis for which nothing really can be done. It is now possible to diagnose the ones due to hemorrhage from the other two conditions by means of careful ophthalmoscopic examinations of the fundi of the eyes and by a measurement of the pressure of the cerebrospinal fluid at lumbar puncture by means of a spinal mercurial manometer. If the ophthalmoscope reveals the signs of a definite increase of the intracranial

pressure and those observations are confirmed by the spinal mercurial manometer this pressure may be relieved permanently by subtemporal decompression and definite improvement results both physically and mentally. GEORGE C. DITTMAN.

PEMPHIGUS OF THE CONJUNCTIVA: Captain Ray Connor and Captain Charles A. Burkholder (Amer. Jour. of Ophth. Vol. 1, No. 8, Aug. 1918) in a short article illustrated in color describe a case which came under their observation for several weeks. The disease is rare, in the case cited one eye was involved, the affection was in a private 25 years old, who had been incapaciated from military duty for nine months, family history unimportant, he gave a history of recurrent attacks of inflammation of the left eye for seven or eight years, exacerbations came and went. While in France the bullae constantly recurred either singly or in pairs both on bulbar and palpebral conjunctiva, lasting a short time and leaving a greyish membrane which gradually atrophied, the vision O. D. 20–30; O. S. 20–100; when first seen the eye showed a slight photophobia and muco-purulent discharge, discoloration of conjunctiva, lower fornix obliterated by adhesive bands, cornea showed scars of earlier ulcerations, iris, lens, media and fundus were normal. During the course of observation blebs formed on bulbar conjunctiva gradually sloughing, smears from conjunctiva showed pus cells but no pathologic bacteria.

The authors conclude that this is a true case of pemphigus of the conjunctiva running the same stubborn course with sequellae although there was no general phemphigus nor lesion in other eye, it must be classed as a mild form of the disease.

GEORGE C. DITTMAN.

APOCODEIN: A New Laxative with Exceptional Advantages. W. C. Alvarez, (Calif. State Jour. of Med. Sept. 1916) states that the gastrointestinal tract is not an automatically working tube into which food is put at one end, progressing uninterruptedly to the other end, rather, it is, a highly complex neuromuscular-vascular mechanism, with antagonistic innervations, under the balance of central nervous system and the splanchnics.

Accepting these facts the author has come more and more to regard constipation as of a nervous or mental origin. In scores of cases he has seen constipation come and go according as patients mind was agitated or at rest.

Constipation is universally associated with a spastic colon which works not too little but too much, pumping the feces back away from the rectum. The great need, therefore, in treating constipation is a drug that will either block the nervous impulses or relax the general tension. In this latter class, some simple nervous sedative, such as adalin or bromural, in small doses given three times a day, is sufficient to relieve the constipation. In the former class atropine is some cases seems to work well in blocking the nervous impulses.

Now apocodein is a drug that combines both the above properties. It is derived from codien as apomorphine is derived from morphine. It has been used in the experimental laboratories but very little in clinical medicine. Apocodein has lost most of the narcotic effects of codein and gained in laxative properties. It has a decided nicotin-like effect, paralyzing the sympathetic nerve cells and blocking the inhibitory nerve impulse to the bowel. It also improves the tone of the intestinal muscle and by vasodilation improves its blood supply as well, this again favors increased periastalsis. It is the most laxative of all the opium derivatives, and is an excellent hypopurgative for the violently insane. It is used in doses of 1–15 to 1–10 grain. The author submits the following prescription as one which he has found useful:

Rx Apocodein Hydrochlor. grs. 1/15-1/10.
Atropine Sulph. grs. 1/200-1/150.
Saech. Lactis grs. ii.
Met ft. caps. tales No. XV.
Sig.—One 2-3 times a day pc.

In suitable cases this combination will insure a normal formed stool without discomfort. The author has had only three cases in three years who were over sensitive to this drug and these were purged quite severely but without griping. Ordinarily there is no need of increasing the dose and some may even taper off. Their is no habit formation. There is, furthermore, none of that fatigue and emptiness of the bowel which interferes so much with the resumption of normal activity after purgation.

The relief of constipation would undoubtedly cure many cases of indigestion, but in order to really help these cases the emptying of the colon must be as nearly normal as possible. What is needed is a little extra pressure applied evenly and steadily from above to renforce the normal gastrocolic reflexes which are most active after meals. This extra stimulus may be mechanical or chemical. Now much harm is often done from the use of "rough" diet especially in enteroptotics who are unable to pass on this cellulose which remains unduly long in the tract, is over digested and causes gas and distress and under nutrition. These cases respond much better to a chemical laxative.

A final use of this drug is in post operative vomiting, here it often acts wonderfully especially if the vomiting is due to reverse peristalsis. Shortly after injections, normal bowel movements occur and nausea and vomiting cease. N. C. HENSEL.

PROSTATECTOMY: With Its Preparatory and Post Operative Treatment. Brandford Lewis, (Surg. Gyn. & Obst. May, 1919). This instructive paper has been divided into three sections: 1, preparatory; 2, operative; and 3, post-operative treatment. Preliminary to the preparatory treatment the patient should have a careful physical examination. Especial importance is placed upon hemoglobin estimation, blood pressure, blood count, phthalein output of the kidneys, etc. The presence or absence of cystitis is of great importance in deciding between the one and the two stage operation. In brief if the patient shows deviation from normal, he should be regarded as a hazard and must be conscientiously prepared. The infection in the

bladder must be reduced and Lewis advises that this be done by irrigation through a catheter which is retained in the bladder. He objects strongly to removal and reinsertion of the catheter. A hemoglobin above 60% is favorable, 50% questionable, 40% unfavorable 30% fatal. The phthalein output should be above 30% for two hours.

Regardjng the route of operation, the suprapubic method is advised because, as the author naively says "you obtain better results." Depending upon the age of the patient and his general condition, decision is arrived at concerning the one or two stage operation.

In a debilitated individual or in a case with an infected bladder the two stage operation is recommended particularly because firm adhesions are formed between the bladder and abdominal walls and also because the bladder itself can be properly irrigated.

The anesthesia as used by the author in the one or two stage operation is novocain or local anesthetic for the cystotomy and gas or ether for the prostatectomy. With the use if the two stage operation one or two weeks are allowed to elapse before prostatectomy is attempted. Lewis concludes with a detailed description of his method for prostatectomy which as a matter of fact is the method that has been generally adopted by the surgeons of the country. The paper is clearly written and is valuable because it condenses an important subject into a few pages. G. A. Geist.

A NEW INCISION FOR APPENDECTOMY: Leigh F. Watson, M. D., (Annals of Surgery, Oct. 1918, Vol. LXVIII, No. 4, page 379) states that the number of incisions that have been brought forward for appendectomy from time to time, show that no one incision is adapted to all cases. Many writers have noted that in the cadaver the base of the appendix is found at McBurney's point, while in the living subject it is below this point, usually on a level with the center of Poupart's ligament. A number of operators have called attention to the ease with which the appendix can be removed when operating for right inguinal hernia. Since 1910, I have used a new incision, with its center over the base of the appendix, and believe that in many cases it is an improvement over those in general use.

Incision: A point one and one-half inches from the right anterior superior spine, on a level with a line connecting the two superior spines, is selected for the beginning of a vertical incision which extends directly downward for two to three inches to a point just above, and to the inner side of the internal abdominal ring.

Advantages: Traction to expose the appendix is avoided, because this incision, in the external oblique and its aponeurosis, the most resistant structures, is directly over the base of the appendix. It can be enlarged without weakening the abdominal wall. The ilio-hypogastric and ilio-inguinal nerves are not injured because the incision lies between them. Because this incision is made over the cecum, the small intestines do not crowd into the wound as they do when the McBurney and lateral rectus incisions are used.

STUDIES ON EXPERIMENTAL SURGICAL SHOCK: F. C. Mann, (Am. Jour. Physiol., 1918, xlvii, 231-250). The article consists of four studies on experimental surgical shock. In the first study the subject is considered in a general way. It is emphasized that the condition termed shock by the surgeon is due to a large number of causes, and that experimentally it is very difficult to reproduce the environment and all the phenomena which he calls shock. The author found it convenient to classify various conditions termed shock into two groups.

The first group included those cases in which the cardinal signs developed sometime after the exciting cause, the second group those cases in which a severe or fatal issue followed immediately or very closely the action of the exciting agent. The author suggested that each of the various theories concerning the etiology of shock are partially true but that not all of them explain fully the cause of the condition.

The second study has to do with the relation of anesthesia to surgical shock. The effect of a constant ether tension and of slight variations of ether tensions on the different reflexes is discussed. The conclusion is that it is very difficult to study shock unless constant ether tensions which could not be varied by any action of the animal were administered.

The third study discusses the reflex inhibition of respiration as a cause of sudden death during operation. It was found by a study of the various respiratory reflexes under different tensions of ether that the reflex which produced inhibition of respiration was not abolished under high ether tensions in a similar manner to the excitatory reflexes of respiration. On the contrary it was found that this reflex seemed to increase, and under ether tensions just high enough to abolish the eye reflex, it was often possible to produce death by the stimulation of the fibres which inhibit respiration. The author states that ether tensions that will decrease or abolish the excitatory reflexes of respiration do not seem to depress the inhibitory reflexes, and that in most instances the action of the inhibitory reflexes seems to be increased, although this may be only a relative result. Ether tensions that will depress the respiratory center so that it will not respond to the increase of carbon dioxide in the blood, usually will not abolish the inhibitory reflex. Under such conditions stimulation of the nerves inhibiting respiration will quite frequently produce death. This may be the process by means of which sudden death is produced during operation. However, death due to inhibition of respiration should never occur under light surgical anesthesia.

The fourth study is in relation to the capillary and venous beds to the signs of shock. It was found that the ligation of all structures of the limbs of a dog, except the major artery, would usually produce all the signs of shock. The relative amount of tissue involved by these ligatures was on an average approximately 15 per cent of the total body weight. These results following the application of the ligatures were found to be due to, (1) stagnation of circulatory fluid, (2) damage to large areas of tissue in such a manner

that their mechanism for controlling food exchange and possibly fluid volume was impaired, and (3) toxic products of cell metabolism and cell disintegration. The probability of these factors being involved in certain cases of shock are discussed.

THE DIFFERENTIAL DIAGNOSIS BETWEEN MITRAL STENOSIS AND AORTIC INSUFFICIENCY: E. H. Goodman, (Am. Jour. Med. Sc. Vol. 157, April, 1919) calls attention to the interesting differential diagnosis between these two conditions which is often a rather difficult proposition. The author takes up in a systematic manner the differences shown in the usual methods of physical examination. In the first place in aortic regurgitation the left border is usually beyond the 9 or 10 cm which is usually considered the limit of the normal heart measurement to the left, and the apex beat is felt as a tumultuous diffuse slow rising and falling impulse in the fifth or sixth interspace. In mitral stenosis on the other hand, the left border may not lie beyond the normal left hand limit as no hypertrophy accompanies this lesion, in his opinion, unless a mitral regurgitation accompanies the stenosis. The apex beat in the stenosis is more circumscribed and taps the palpating hand. No differences in the character of the thrill in the two conditions can be determined.

Pulsating vessels, the Corrigan pulse and a capillary pulse are all common in aortic regurgitation. A Corrigan pulse, however, is not uncommon in other conditions. Traube's sign can sometimes be elicited at the elbow with the arm extended over the head when it cannot be heard elsewhere.

Taking the average pulse pressure to lie between 45 and 55 mm. Hg. a pressure above that points towards aortic regurgitation. In the same manner a difference of more than 60 mm. Hg. between the systolic pressure in arm and leg suggests the same lesion.

Auscultation gives little differentiation. The Graham-Steell murmur of stenosis is seldom heard beyond the area of production while the diastolic in aortic regurgitation can usually be heard down the left border of the sternum. C. B. Drake.

THE PROPHYLAXIS OF MALARIA. In an article appearing in the Am. Jour. Med. Sc. Vol. 155, No. 1, C. C. McCulloch in reviewing the subject lays emphasis on the importance in warfare of little things, viz: bacteria. It was in 1880 that Laveran, a French army surgeon discovered the plasmodium in the blood and in 1883 King definitely stated the association of the mosquito. This was a little later proven by Ross and still later experiments by Sanborn and Low in 1900 are detailed. The astonishing percentage of ineffectives in the various modern military campaigns resulting from malaria is further described and the sanitation in Cuba and Panama under Gorgas mentioned.

Some interesting points regarding the identification of the kind of mosquito through the egg, larva, pupa, and full grown stages are given. The eggs of all mosquitos are laid on or near the water. Those of the Anopheles are laid singly with slight tendency to cohere and hatch in two to four days. The larval stage is that of the well known wiggle-tails. The larva of the anopheles are smaller than the other species and lie with their bodies parallel to the surface of the water instead of forming an angle of 45 to 90 degrees with the water surface as the Cullex and Stegomia respectively do. They stay on the water surface and dart about looking like dark colored short spicules. This stage lasts about a week or two depending on the temperature. In all mosquitoes important medicany the male has feelers as long or longer than the proboscis but only in the anopheles is this true of the female. The female mosquito alone sucks the blood. The antennae of the male has long silvery hairs while those of the female have only a few downy ones.

The adult Stegomyia, now ealled the Aedes Calopus, is black and white in coloring while most Anophelines have black or brown patches on their wings though some are mottled yellow and brown. Again the Anopheles instead of resting with its body parallel to the wall is tilted at an angle of about 45 degrees. The song of the Anopheles is in a lower key and thus less distinctly heard. The Anopheles too is more often found in rural districts in contrast to other varieties more urban in location.

In attacking a malaria-infected district the following methods should be used:

1. Eliminate breeding places for an area of 300 yards about a village or 100 yards about a dwelling. This is effective practically although mosquitoes and especially the Anopheles can fly a greater distance than this. This is most effectively performed by drainage.

2. Kill the larvae with crude oil or kerosene placed on the water surface which prevents the larvae from breathing, or the addition of a larvacide, perferably some form of carbolic acid.

3. Screening is better than mosquito netting. Brush should be cut about the house for a hundred yards at least as this affords protection to the mosquito from the sun.

4. Malarial patients should be screened.

5. The prophylactic use of quinine, 6 grains daily or 15 grains two days in each week. C. B. Drake.

BOOK REVIEWS

QUARTERLY MEDICAL CLINICS. Frank Smithies, M. D. Vol. 1, No. 1.

It is with much pleasure that I reviewed the first volume of the Quarterly Medical Clinics. Knowing Dr. Smithies both personally and professionally we had

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ORIGINAL ARTICLES

THE GRAPHIC RECORDING OF REFLEXES, CLONUS AND TREMORS.

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In undertaking this work, two great problems were confronted—1st. The securing of consistant constant graphic records of the reflexes, clonus and tremors; 2nd. Their interpretation and the underlying physiological basis.

So many were the difficulties and so great the time consumed in attempting to solve the first problem that all questions of interpretation will be deferred for later communication.

Prominent among the early workers making accurate studies and contributions to our knowledge of nervous phenomena, is Marshall Hall[1], whose findings, demonstrating the reflex or excito-motor system of nerves, were published in 1838. Within the next decade he demonstrated that the posterior columns of the cord were sensory, while the anterior were motor in function.

Preceding and leading up to these important discoveries of Hall, were several investigations worthy of mention in this connection. J. H. Miller[2], of Baltimore, started his work in 1809 and demonstrated important functions in relation to the great sympathetic plexus of nerves and included information relating to this work in his lecture delivered at the Washington Medical College in 1827. Brachet[3], carrying on researches in France, also made important contributions. Perhaps most important, however, are the brilliant discoveries of Sir Chas. Bell of London[4] demonstrating the distinct sensory and motor functions of the posterior and anterior roots of the spinal cord. His publication appeared in 1824. An earlier communication of Hall's presented to the Royal Medical Society of England in 1833 should also be mentioned.

Though the work of these men was conducted independently, they arrived at the same general conclusions and established definitely that the sympathetic plexus is connected with the posterior column of the cord and that the motor impulses pass from the anterior roots.

Three other important contributions should be mentioned before taking up the work of Westphal and Erb. George Morton[5], of Philadelphia, published a research in nerve physiology in 1839, entitled "Grania Americanae." The work of Magendie Floures[6] on the relation of the brain and medulla oblongata to the functions of the cord, and that of H. H. Smith,[7] are to be mentioned in connection with the development of our knowledge of the various reflexes.

Since Westphal and Erb[8] recognized the values and introduced studies on the knee jerk, or patellar tendon reflex, it has been a fruitful field for scientific research and extensive literature has been gathered about it. The work of Fuerbringer[9] on section of the cord in the upper dorsal region of rabbits showed that lively knee jerks could be elicited despite the claim of Rosenthal and Mendelsohn[10] that, after transsection of the cord at different levels, the knee jerk is lost, and that the production of the reflexes required an intact arc in the region of the cervical enlargement.

In the work of Gad and Flatau[11] with high trans-section of the cord in dogs, weak knee jerks were obtained or were sometimes temporarily abolished, though with low trans-section of the cord the knee jerk continued.

A short time later Sherrington[12] conducted comprehensive and extended studies on the

knee jerk in monkeys, doing trans-section at various levels, and also observed carefully all the other reflexes affected. His report shows that knee jerks were lost for a time, though in cats and dogs that were transsected at the same time, the reflexes were not lost even on trans-section as high as the cervical region. The resulting shock produces a temporary disturbance, which in man is of longer duration.

Following this Margulies[13] demonstrated that cutting the cord produced lesions resulting in flaccid palsy, and crushing the cord produced lesions resulting in loss of the knee jerks.

Stewart P. Turner[14] concludes that, though his findings were not constant on section in other animals, in monkeys the higher the level of trans-section the greater the likelihood of loss of the knee jerk, while in man transverse injury above the lumbar enlargement usually leads to loss of the knee jerk, though in complete transverse injury it abolishes it only temporarily. Trans-section produces an impaired neuro-muscular tone. Voluntary movement is abolished while the true reflex is not impaired. A great autonomy exists in the spinal segments in maintaining neuro-muscular tone as we descend the vertebrate scale.

The work of Buchanan[15] done with frogs, particularly in electric stimulation and the timing of reflexes, to my mind shows only that the action of a carefully excised frog's muscle suspended in salt solution will differ greatly from that of the human muscle in normal or abnormal conditions. Waller[16] did important work along the same lines, publishing his results in the early eighties. Lombard's work[17] on the normal knee jerk is one of the most masterly studies made up to that time. In summing up his conclusions, he says—"It is highly probable that the tendon phenomenon is a direct muscular contact and the integrity of the nervous arc is necessary for its production."

Neuro-pathologists of the present day are following the teaching of Bastian that the cord is not the absolute center of reflexes: though there appears with most transverse lesions an increase in reflexes, the consensus of opinion is now that the tendon reflexes are independent of nervous action beyond the spinal cord.

Laborde (quoted by Jendrassik) reports instances showing that tendon reflexes persist after decapitation: hence brain action is not required for the production of all reflexes. Sahli[18] believes that the cerebrum is essential. In contrast to the earlier ideas, Jendrassik[19] has formulated a theory of reflexes which is based upon clinical evidence and is worth careful consideration. "Reflexes are spinal or cerebral or a combination of the two." Sahli, discussing the subdivisions of Jendrassik, says that "they do not consistently hold good" and he suggests that Jendrassik's group 3 be called cortico-nuclear, and those involving the spinal areas of innervation be called cerebrospinal reflexes, because in a transverse lesion of the cord the cerebellar reflex arc is also interrupted and one would expect a loss of cutaneous reflexes, but this does not occur since the lesion interrupts the sensory conduction through the cord and in a measure dams the sensory stimulation. (Jendrassik's group 3). To this group belong reflexes which have complicated centers, within which the reflex occurs, not as a single movement but as a series of such, e. g., sneezing, vomiting, swallowing, coughing, urinating, defecating, genital reflex (ejaculation). Therefore the peripheral impulse must find a path in the region of the lower cord segment. It generally selects the customary path (the formed spinal reflex arc) of the coresponding cerebrospinal reflex and so the cutaneous reflexes become purely spinal. This explains how many of the preserved reflexes retain their complete and identical distribution. It also explains how other reflexes, by means of the damming up of the exciting impulses at the lesion, attain both abnormal intensity and distribution by transmission of the impulse to the neighboring paths.

Sahli's theory contrasted with Jendrassik's simplifies the scheme of reflexes. There are two groups of reflexes: (1) spinal, or better, nuclear, because some of them occupy the region of the cranial nerves and would include the tendon, periosteal and joint reflexes: (2) the cerebrospinal or cerebro-nuclear reflexes, including both normal, cutaneous and mucous membrane reflexes and including also Jendrassik's group 3. In the latter group the brain and spinal cord act normally together: that is, the activity in the lower nuclear reflex arc is under physiologic conditions discharged by the cortex. In transverse lesions of the cord, reflexes of the second group may originate ex-

clusively by way of the cord and so be increased or even deformed by reflex damming.

Lombard[20] made careful studies in the variations of the knee jerk. Bowditch and Warren[21] conducted interesting investigations as to the time element in the knee jerk and the effect of reinforcement. Waller[22], in a very instructive article, reviews the work of Lombard[23] and of Bowditch and Warren and sums up in conclusion as follows: "It is highly probably, that the tendon phenomenon is a direct muscular contraction and the integrity of the nerve arc is necessary for its production." Devising some new apparatus, he secured excellent records of the knee jerk with time portrayal. On the completion of his experimental work with rabbits he concludes: "The so-called tendon reflex is a phenomenon of direct excitation, its lost time is practically identical with that of direct contraction, whereas the lost time of a reflex contraction is three times as long".

Other experimenters have shown that the integrity of the spinal arc is a necessary condition. This time consideration as indicated by Waller, is, in my opinion, the most effective argument yet brought against the theory of reflex contraction.

The reflex may be obtained with the patient either in a sitting or recumbent position. If the patient is in bed, flex the knee to an obtuse angle, the heel resting on the bed, support the knee with the left hand and tap the patellar tendon with the hammer and if the contraction is produced, the quadriceps extensor—if the reflex is active—may cause extension of the leg: if it is faint, the contraction may be just visible underneath the skin, though care should be taken that the jar of tapping the tendons does not produce a movement that resembles the reflex. Be sure that the muscles of the leg are not tense. This can be tested by suddenly removing the supporting hand and if the muscles are relaxed the leg will drop to the bed. This reflex may be reinforced according to the method of Jendrassik, pulling on the two hands hooked together.

If the reflex is elicited with the patient in sitting posture he is seated with legs crossed or with feet flat upon the floor and legs as nearly vertical as possible. A better method is to have the patient seated on a table or edge of a bed, with legs hanging free. By placing the left hand on the thigh above the knee while tapping with the right hand, a contraction will be felt with the left hand. On tapping the left forefinger placed over the patellar tendon, increased extension of the tendon may be felt.

The method of Lanfanauer's reinforcement[24] may be used. The patient is seated with both feet touching the floor, the examiner grasps the quadriceps with the left hand and the patient grasps the upper left arm of the examiner. As the patient squeezes the arm of the examiner the tendon is tapped with the hammer. In Schonborn's method[25] of reinforcement the patient squeezes the left hand of the examiner while the latter taps the tendon with the hammer held in the right hand.

Knee jerks, as existing in apparently normal individuals, are usually described as absent, mild, strong and exaggerated. Very extensive scales describing the degree of this phenomenon have been used, as many as ten degrees or variations being described in thus designating the strength of the reflex[26].

A normal reflex is evidence that the spinal segment, by which it is connected with the extremities of the arc, Fig. 1. is in a state of physical harmony. When there is a diminished reflex or an absence of reflex there is some interruption of the reflex arc. This arc leads from the peripheral end organs, through the sensory nerves leading to the posterior sensory ganglia on to the posterior horn through the segments, thence to the anterior motor roots in the anterior horn and on to the muscle.

There are two great groups of reflexes, superficial and deep. There is a superficial reflex action coming from the end organs in the superficial tissue or at the surface of the skin: and there is a deep reflex or action coming from the muscle, bone or tendon. The superficial reflexes enter through the posterior root ganglia, at the arc directly through the cord and leave at the same level by way of their anterior motor roots. The deep reflexes enter in the same manner through the posterior root ganglia. From there they pass in part to the sensory root of the cord where they enter and follow the indirect sensory tract of the cortex. (Fig. 1^1.) Others pass through the posterior horns to the anterior horn where the sensory impulse is translated to a motor response. (Fig. 1^3.) Where the governing fibres from the

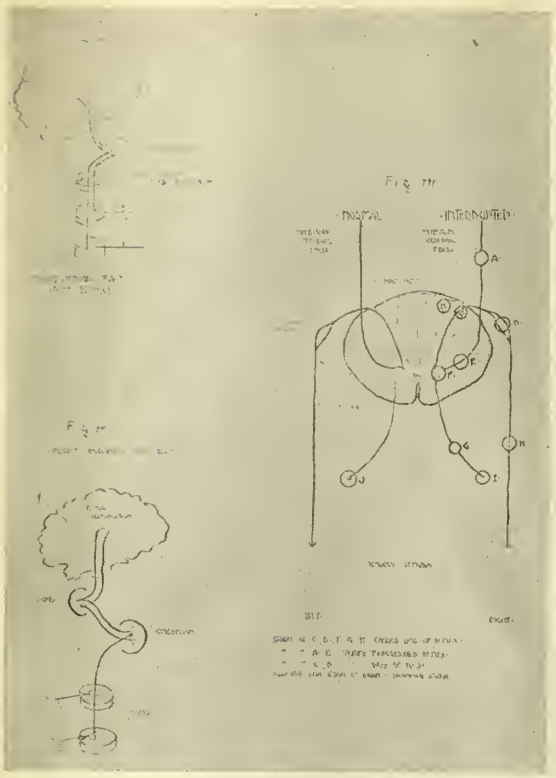

Fig. 1.—1[1]. Indirect (sensory) Tract, (Deep Reflex.)
1[2]. Indirect (involuntary) Motor Tract.
1[3]. Route of the Normal Reflex with Results of Lesions.

cortex through the indirect motor tract join the reflex arc, the governing action either is inhibited or accompanied by the impulse from the cortical area. (Fig. 1[2].) From the anterior horn cell the impulse passes along the motor nerve to the muscle.

Phelps[27], in a study at the Minnesota State Hospital for the Insane at Rochester, has carefully searched the literature of the knee jerk. He says, "Rather surprisingly there is no scale by which to measure the degree of this phenomenon." In his work he finds that in some persons the knee jerk was quick and short: in others, longer and slower. In one hundred normal subjects (attendants) there was one case of absent reflex. This case was observed over a year and also two normal individuals showing the opposite extreme—an ankle clonus. He estimates that in about two per cent of healthy people the knee jerk is absent, though Jendrassik's method of reinforcement succeeds in eliciting it.

Recently a strong reaction against the prevalent conception of muscular tonus has set in[28]. It is maintained that there is no such thing as a general contraction of muscle when at rest, but that a so-called tonus is the coordinative performance that calls forth a certain attitude by means of finely graduated contractions.

Many of the so-called pathologic reflexes should be regarded as deformations of the normal reflexes depending upon the encroachment on the reflex impulse of the pathways which become accessible to the impulse only because of an obstruction which is interposed in the ordinary reflex tract and in consequence of the reflex damming. The reflex, though modified, can still be recognized. In other cases reflexes occur as pathological phenomena, a peculiar exageration accompanied by reflex movements of a distinctly muscular type.

Sahli[29], in closing his chapter on a discussion of the segmental localization of the spinal cord, says—"The frequent contradictions which exist between the different writers show how unsettled the question remains; that accurate clinical and pathological examinations will not only supply numerous corrections but will extend our knowledge as well. These findings, especially where they concern the reflexes and their relation to the segments, must be critically examined for light on the genesis of reflexes."

Engaged in electrocardiographic studies during the years of 1914 and 1915 and noting in these records the deflections (extra-cardiac or extraneous) produced by voluntary muscle movement, the writer began a more systematic study of extraneous voluntary and involuntary movements. A normal muscular contraction produced a definite curve or series of curves while muscular contractions associated with some pathological conditions, as tremors, produced a definite type of oscillations of the galvanometer string. These oscillations passed through stages according to the degree of involvement, to a definite series of rhythmic oscillations as observed in clonus. Noting the constant recurrence of these records of muscular response, serious attempts were made to secure definite records of contraction of different groups of muscles. Securing constant results from these, attempts were made to secure records of various reflexes.

The results were so promising that early in the spring of 1916, with the assistance of Dr. Henry W. Woltmann, a systematic study of various reflexes and tremors was begun and graphic records were made with the string galvanometer, using the same instrument as that employed for studying action currents in the heart.

Our instrument is the Cambridge Modification of the Einthoven String Galvanometer, or electrocardiograh. (Fig. 2.)

Our earlier records were secured at the time of making the regular electrocardiographic runs, at the electrocardiographic station: with the recording apparatus in Millard Hall, University of Minnesota: the sending stations on the different floors of the University Hospital: the connection through under-ground cables some 1390 feet long. Communication with the operator was had by telephone wires passing through the cable.

In the fall of 1916 we returned to Millard Hall, taking records with the patients in the same room with the recording apparatus. The records obtained are identical in type with those from the hospital. The writer has made several new appliances, among them a device for recording the mechanical swing of the leg simultaneously and on the same moving photographic paper with the record of the electric action of the string galvanometer. Electric contact is made by recording the exact time of the blow, giving the signal on the margin of the paper.

Our attentions has been centered principally upon the study of the knee jerk and in recording this reflex. The apparatus as now employed consists of a chair (Fig. 3.) (1) with arms and back in order that the patient may sit in as comfortable a position as possible. The chair is elevated sufficiently so that the feet swing free from the floor. Attached to the front edge of the chair are two light boards (F) that are fastened to the back of the patient's leg. The upper end of each board is attached by a hinged joint to a rod (T) that runs along the front edge of the chair, permitting a lateral movement in order to adjust the leg boards comfortably to the legs of the patient. A vertical rod (E) passes through the centre of the front edge of the chair passing through a collar and is held in place by a set screw (V) so that it can be raised or lowered in adjusting the hammer position. The rod bends forward at right angles at the upper end and to this is attached a double set screw (S) which holds in position a rod (M) that passes at right angles to the forward end of the hammer support and is parallel to the front edge of the chair. This rod supports the hammer (C) in position so that with proper adjustment it will strike the knee in the same spot each time and give blows of the same intensity as many times as desired. The "electrical release" was tried, but catching the hammer on the rebound with the hand and elevating it to the desired position, then releasing, permits using a much simpler apparatus.

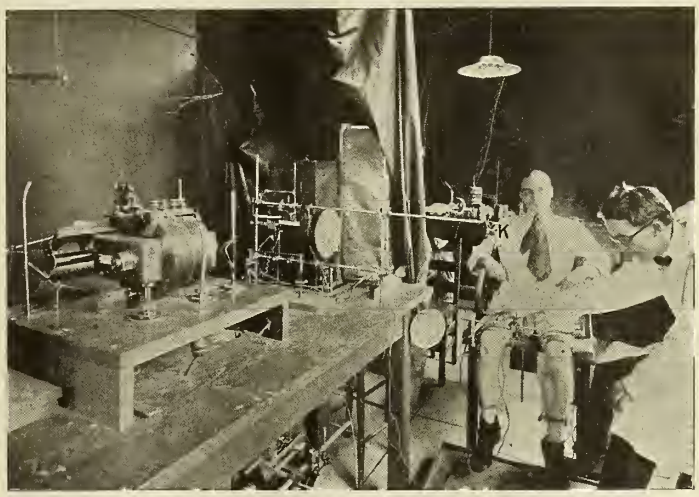

Fig. 2.—Apparatus in use at Millard Hall, University of Minnesota.

Several types of hammers have been used. Our earlier work was done with the ordinary percussion hammer, the blow being given with the hammer held in the hand of the observer. Later this was modified in order to record electrically the moment of the blow. A little later the writer devised the swinging hammer held in position by the support described above. A small metal-headed hammer was used, the metal head being placed in electric circuit, a small piece of metal gauze (D) being placed over the patellar tendon and being insulated so that no portion of it touched the body. This was placed in the circuit with a signal magnet placed at the lower or right edge of the slit of the recording apparatus of the electrocardiograph. Thus at the moment the hammer touched the knee the circuit was closed and a record made of the moment of contact. The loss of time that occurs by the use of this method amounts to approximately one fourtieth of a second. The hammer handle has five holes in it which permit it being hung upon the adjustable rod in such a manner as to allow adjustment for a blow of greater or lesser force.

The necessity of exact control in the strength of the blow early became apparent. This was accomplished in two ways. 1st. by varying the length of the arc through which the hammer fell, by suspending the hammer through different holes in the handle, 2nd, by allowing it to fall either 45 or 90 degrees. Figure 5a shows effect of dropping the hammer alternately through 45 and 90 degrees, and figure 5b, the same with re-enforcement.

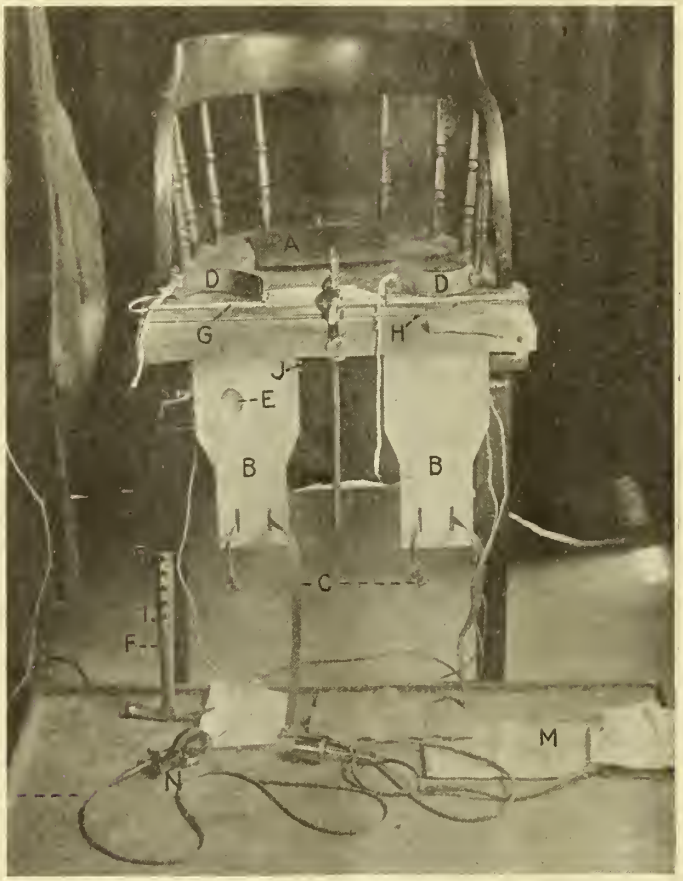

Fig. 3.—The chair and its attachments, used in Obtain-Reflexes. Also apparatus (below) in obtaining Clonus Record.

The later model of hammer has a double contact head that does away with attachment of the metal gauze connections with the leg so that, when the blow is struck, a cap over the head of the hammer, but not in contact with it, is forced into contact, closes the circuit and produces the swing of the signal magnet indi-

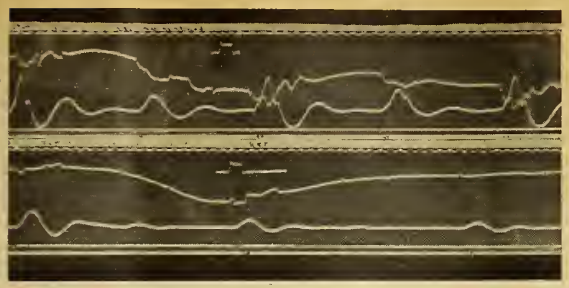

Fig. 5.—Shows effect of dropping the hammer alternately through 45 and 90 degrees.

cating the moment of the blow. The apparatus is arranged so that both legs are attached, double swing boards and electrodes being used. This permits the securing of repeated records of the same leg or of the opposite leg under the same conditions without disturbing the subject.

The electrocardiograph, such as we use in securing our cardiac records, consists of three units—a lamp, recording apparatus, and an Einthoven string galvanometer.

In securing records of knee jerks, the subject is seated in the chair described above, attachments are made to the galvanometer by means of electroces (K and L) similar to those used in our electrocardiographic work, one electrode being placed upon the knee (L) and one placed on the chair (K) so that it comes in contact with the sacral region. The wires leading from either electrode pass directly to the string galvanometer though it is possible to carry them to any distance.*

The attachment to the string galvanometer are connected to Lead I and Lead II of the switch board and if a third record is desired, with attachment not only from the knee to the sacrum but to the spine, there is attached the Lead III which permits securing further records without disturbing the subject by simply throwing a switch as in cardiographing.

Various time markers have been used, giving records of one-tenth to one-hundreth of a second. The one-tenth second marker is the one usually employed by us and is of the Harvey type.

The apparatus for securing the mechanical swing consists of the swing board (F) in the inner edge of which are inserted three eyelets (O), to one of which is attached a hook which is secured to an inelastic cord which runs over an adjustable frictionless pulley (H) to a hanging indicator suspended in front of the aperture in front of the lens of the electrocardiograph. The indicator produces a shadow parallel to that of the string galvanometer. Holding the indicator in position on the other side is a coiled steel spring (B in P Fig. 2), the tension of which is adjustable. So long as the indicator remains in a vertical position the tension on the string leading to the swing board is constant. This apparatus has given very constant and satisfactory results and produces a record that is of the highest value.

The record, as it appears, from a comparative point of view at the extreme left or upper side of the paper as ordinarily held, indicates the movement of the time marker: next comes the record of the galvanometer string: and then the record of the mechanical indicator: and at the extreme right or lower side of the record is the record of the time indicator.

One great difficulty that presented itself in securing records of reflexes was the adjustment of the string of the galvanometer so that records of a constant value could be secured. To overcome this the following method was used. When ready to secure a record, the subject being properly attached and the photographic record paper started, one millivolt of current was thrown into the circuit from the switch board, the string of the galvanometer having been adjusted previously so that as nearly as possible to secure a deflection of 10 mm. The introduction of this millivolt of current thus produces a deviation of the string so that the width of this primary deflection represents 1 millivolt (Fig. 4.) Thus we have a means of comparing the different records.

As a routine practice in recording knee jerks, we make three records of each limb, starting with the left: first the knee jerk, then the knee jerk doubly reinforced, and then a voluntary swing representing as nearly as possible the swing produced by the reflex. The greater care has to be used in securing the normal reflex to have the patient in as easy and comfortable a position as possible, with the eyes closed and the thoughts diverted from the reflex problem. Early in our work we found that the patient, being on the qui vive, and the operator of the galvanometer saying "Now" when ready, pro-

*At present we are taking records in the same room with the apparatus and also from the University Hospital, a distance of about 1,500 feet.

duced a reinforcement or increase of the reflex. Since then the operator signals by raising the hand when ready. In securing the reinforced knee jerk, a double reinforcement is used. The subject watches the hammer drop and, the moment it is released, pulls quickly. This reinforcement in most cases produces a marked increase in the electrical reflex Fig. 6 though in some subjects it has more of an inhibitory effect on the mechanical, the subject holding the muscles tense.

There is a marked increase in sluggish reflexes when reinforced by Jendrassik's method. In Fig. 7 this is well shown. While on the other hand reinforcement may have a tendency to decrease secondary and tertiary swings. This is well shown in Fig. 6, in which records 1 and 3 without reinforcement should be compared with 2 and 4 with reinforcement. In our earlier work, the records taken were "f s", full swing, "s r" swing and return, that is the leg was stopped after completing one outward swing and return to stop. These records do not show the secondary and tertiary swings. As in Fig. 8, though there was often a jar or rebound that was shown. Later records consisted of (a) the direct blow, (b) the blow reinforced, (c) the voluntary swing, resembling nearly as possible the movement caused by the reflex swing of the leg, with as complete relaxation as possible. The patient, having been instructed as to the voluntary swing, on signal kicks as nearly as possible in the same swing as produced by the reflex.

Three records are usually taken of each different phase for comparison. It is interesting to note in certain so-called normal cases that there may be a marked increase or diminution of the reflex evidenced with succeeding blows.

In securing a record of the knee jerk, the patient is seated comfortably in the chair with sufficient clothing removed to easily get at the parts desired. The electrodes are placed in position with the same care as in cardiographing, being covered with a warm felt pad saturated with salt solution and this in turn covered with a piece of tissue paper. With the finger as a hammer, the point of greatest reflex action is located and this marked with a pencil. The leg swings are then secured to the leg and the cord to the mechanical indicator is attached and adjusted. The hammer is then placed in position and adjusted so that the point of greatest blow comes directly upon the spot previously marked. If a stronger blow is desired the hammer is moved to one of the holes higher in the handle. The indicator wire can be placed in position so that a blow of either 90° or 45° can be determined. This means that a blow of half or full strength can be determined without rearranging the apparatus. Fig. 5.

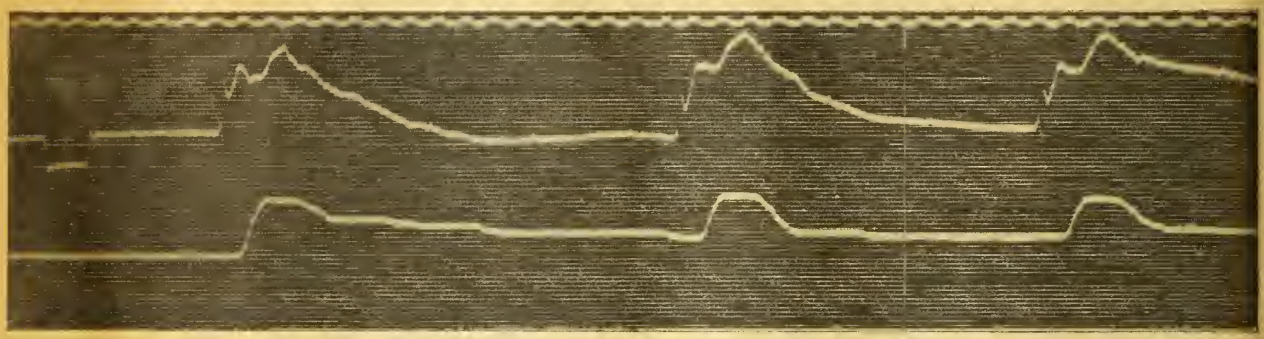

Fig. 4.—Three Knee Kicks, showing constancy of Record. The arrow indicates the effect of introduction of 1 millivolt.

The difference of the knee jerk as observed by the eye and as recorded by our graphic methods is indeed marked. The knee jerk as ordinarily elicited may appear to be very similar, but by the graphic methods of recording may be extremely different. Cases, that by the ordinary method show no knee jerk, may, by the graphic method, show a marked electrical reaction with the string galvanometer. Fig. 7 The initial reflex action is evidenced by the rapid oscillation of the string resembling the sharp pointed R-wave of the cardiogram. This is usually of the diphasic type as the R-S wave, Fig. 6[3], though in occasional records, as in neuritis, it may even appear as quadriphasic. This wave which we deem the true reflex action occurs in a very small fraction of a second after the blow is struck on the patellar tendon. Fol-

lowing this wave comes a wave or series of waves that are identical with the waves secured in the voluntary swing of the leg of equal length. Various factors, such as fatigue, drugs and toxic conditions in general, seem to influence the width of excursion of this reflex action, but the individual type of record remains constant and its relation to the inception of the oscillation due to the mechanical swing of the leg is the same.

Certain cases show a positive initial deflection indicated by movement toward the upper right side of the records and is usually of opposite polarity to the reflex itself.

The reflex is of very short duration, about one-fortieth of a second. At present we have not the means at hand to accurately measure this, though later we hope to make a study of the various time elements. The mechanical swing of the leg usually begins one-tenth of a second after the reflex action and may consist of a single swing, or as many as five. The time element varies greatly in the swing in returning to the base line. If the subject holds the leg tense it is evidenced by a slower ascent and gradually receding descent of the marker to the base line, Fig. 4. This has been termed, by older writers, the "inhibitory effect."[30]

The knee jerk varies in different individuals under different normal conditions. Though they are constant under similar circumstances, they may be greater early in the morning than later in the day (fatigue): increased after meals: increased by mental activity: increased by cold, voluntary movements, strong sensory sensation, or emotion. They are lost in sleep[31].

In the work of Lombard,[32] Bowditch,[33] Warren[34] and Noyes[35] elaborate examinations were made of this feature of the knee jerk and extensive records were made from a subject by use of a delicately constructed apparatus.

Diller[36] examined the knee jerk of 103 students whom he considered normal. In no case was the phenomenon absent, though in one-fifth of the cases it was difficult to elicit, and repeated blows were necessary to bring it out. His conclusions were that the knee jerk varied greatly in length and rapidity of excursion. He says, "It would be desirable to measure definitely and record both of these elements".

Mitchell and Lewis[37], in summing up an extended research of the knee jerk, say—"In some the same weight of blow causes pretty constant effect when steadily repeated at like intervals, but in others the effects are inconstant and a series of slight motions are apt to be followed by an excessively exaggerated act. Such persons make bad subjects for experimentation. This explosiveness is also apt to follow much excitation of the muscle. Even in the young and healthy the knee jerk varies markedly. It is more marked in the morning, in relaxing states of the weather, disability, exhaustion, all tending to lessen the ease of the reply to the tap."

The fatigue of a reflex is sometimes responsible for mistakes in diagnosis[38]. The response to the first tap should be observed attentively because it may disappear after one or two repetitions. In testing periosteal and tendon reflexes it is especially important to use great care in eliciting reflexes, and to distract the at-

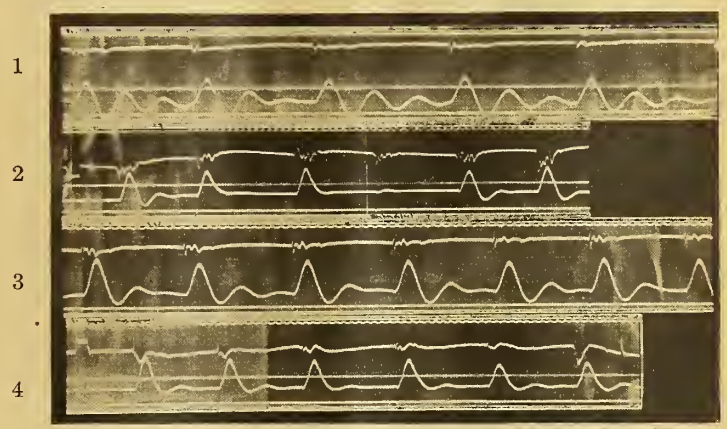

Fig. 6.—Tracings 1 and 3 show left and right K. K. Tracings 2 and 4 show same reinforced.

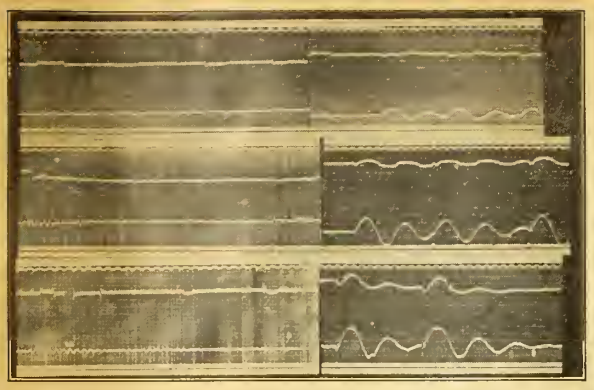

Fig. 7.—Reinforcement of Sluggish Reflexes. On left are group with small action. On right, same under reinforcement.

tention of the patient from the part to be examined, for through voluntary tension the reflex may be inhibited.

Individuals show a constancy in type of reflex that has continued through the period of our observations. The quickness with which the knee jerk responds and the muscular swing following are always of the same general type though they may be modified by various factors.

Knee jerks elicited early in the morning are much greater than those secured from the same individual later in the day or following extensive physical exercise. Fatigue exercises a remarkable influence on the strength and quickness of the reflex. I have taken records of runners under normal conditions and immediately following long cross-country runs. These records show decided lessening in all their forms. I have taken records, using the same individual, and secured records of repeated blows. Certain individuals show no marked change, though innumerable taps may be given, while others may show an increasing reflex and others a diminishing reflex with succeeding taps.

S. Weir Mitchell[39] says of Jendrassik's reinforcement that, "The discovery as to the power of the voluntary volitional muscular movement acts to increase the amount of the knee jerk". His conclusions are—"The knee jerk is a true reflex caused by mechanical irritation of the nerves of the tendon. Duly repeated excitation of the knee jerk in some healthy persons increase the knee jerk. Some cases show gradual loss to oft repeated taps and the muscle ceases to contract. Such movements as frowning, moving the scalp or ears, moving the eyes, all act as reinforcements. Inspiration and expiration act as a decided reinforcement. Sneezing, laughing, acts of phonation, swallowing, and all of the coarser muscular acts increase the knee jerk. Pain, intense fear and cold also increase it."

Lombard[40], studying the knee jerk variations, demonstrated that fatigue, hunger, enervating weather and sleep were conditions which increased the activity of the whole nervous system, and, in consequence, the activity of the knee jerks.

It is a constant observation that the reflex action of the right leg is more marked than the left, as is also the accompanying muscular reaction. This is still more increased by reinforcement. Inflammatory conditions of muscle and nerve bring out a marked reflex increase together with an increased muscular response, though here the action is more irregular due to the irritation present. Former injuries and cases giving a history of neuritis show marked decrease even to absence of the knee jerk on the affected side. At all times great care must be used in securing the knee jerk, for, should the first response to the tap be small, the examiner might consider the knee jerk absent. He must observe each reflex quickly and accurately and make careful repeated examinations in order to determine definitely their presence or absence.

Sahli[41] says—"Any psychic excitement considerably increases the tendon reflexes and this increase may serve as an important sign of the states of psychic excitement. The diminution of reflex sometimes observed in very acute, especially in traumatic, cord lesions is acceptable to the theory that this diminution is due to inhibi-

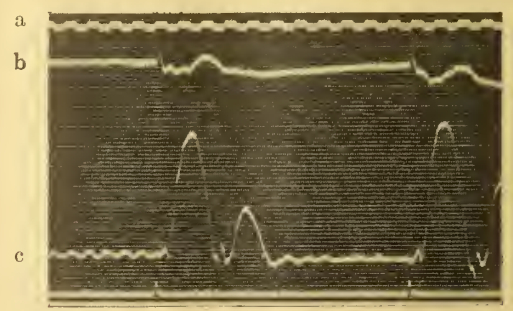

Fig. 8.—Knee Kick in Case of Multiple Sclerosis. a) Time marker. b) Electrical response. c) Mechanical response.

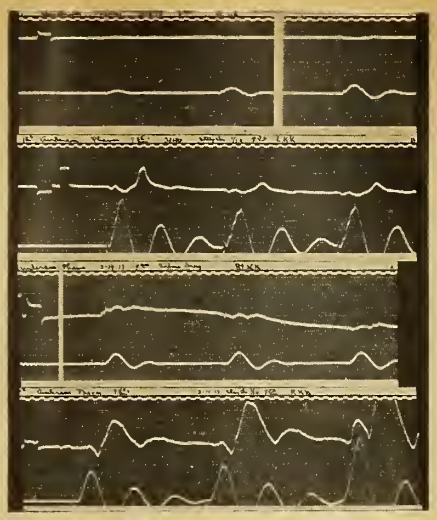

Fig. 9.—Tracings 1 and 3 show sluggish reflexes, 2 and 4 same, 45 minutes after gr. 1–10 strychnia.

tion or to injury to the lower cord segments from circulatory disturbances from the injury.''

An injury to the cord produces a definite type of symptoms. The amount of trauma can only be determined by time, for a slight injury may show an absence of knee jerk for a few days followed by complete restoration of this reflex. In the more severe lesions a trauma may show complete loss of the knee jerk with no return, due to shock. These produce disturbances of the circulations which clear up within a few days. Any inflammatory condition of the nerves of the leg will cause an increase of the knee jerk. Sciatica, for example, produces a marked increase of the affected side that gradually becomes normal as the inflammatory conditions recede. A hemiplegia, due to hemorrhage, produces a broken arc in the upper arc, thus cutting off the inhibition factor and causing a greater knee jerk on the opposite side from the lesion.

As has been mentioned before, a few apparently normal cases show absence of the knee jerk (Westphal's sign)[42] by the ordinary clinical method of eliciting it, yet, with our method of graphically recording reflexes, a minute electric reflex action Fig. 9[1], followed by an electro-muscular action is recorded.

Pathological conditions such as fatigue[43], anesthesia narcosis, tabes[44], Fig. 10. Entire absence of any leg swing is known in this condition. This failure is not mechanical. A large number of the tabetics have failed to show any effects whatever of electrical change when the attempt is made to elicit the knee kick. Fig 10. Three tracings taken at three different times, over a period of two months. On the left the reflex record and on the right the voluntary swing. Diabetes, paraplegia, poliomyelitis, and in acute infections for a short time, also the effects of certain drugs as opiates, may cause a diminution of the reflex action from a clinical standpoint, though, by our graphic method of recording, these cases will show a small reflex with a small electro-muscular and mechanical response. In students we made a careful study of the reflexes as effected by various drugs, among which were recorded, prior to and one-half hour subsequent to the administration of caffein, grs. 5, and of strychnia sulphate, one-tenth gr. An increase following caffein and an increase following strychnia, and with increasing response, each succeeding blow. The caffein relieving apparent muscular irritation, while the strychnia increases the irritability. In transverse lesions of the cord[45], the cutting off of inhibition from the centers above markedly increases the reflexes. As a rule the knee jerk is permanently absent after total transverse lesions of the spinal cord above the level of the arc (Bastian's law), but the reason is not known.

Certain pathological cases present an increase of both reflexes and muscular action, such as myelitis, spastic paraplegia, multiple sclerosis[60] (Fig. 8) and lesions that cause a degeneration of the cord itself. Any irritable condition of the muscle, as in some of the toxic states whether from stimulant drugs as strychnia, (Fig. 9) or internal conditions, increase the knee jerk.

Many times we secure records of knee jerks that present peculiar formation in type, a char-

Fig. 10.—Tracings from Tabetic, over period 3 months.

acteristic form both in reflex and muscular response, apparently due to the predominant action of certain groups of muscle bundles in a definite manner. These individual types persist so that repeatedly we have obtained similar peculiar records from the same subject.

CLONUS.

Clonus may be defined as a reflex irregular contraction of muscles. In any muscle in an irritable stage with increased tonus, the tendency to clonus action is greater as the tone increases. The principal clonus described by clinicians are the ankle clonus, the patellar clonus and the jaw clonus. In securing ankle clonus, the knee is slightly flexed, the heel resting on the palm of the examiner's left hand and his right hand grasping the foot, extending it and suddenly dorsi-flexing the foot upon the leg. An initial series of clonic involuntary contractions of the muscles of the calf is elicited and repeated under sustained pressure of the flexing hand. This constitutes true clonus. The patellar clonus is elicited, while the knee is flexed and the heel resting in the examiner's hand as before, by making quick and sudden pressure with the thumb and forefinger and suddenly pushing patella downward and holding it firmly. A clonus of the quadriceps extensor is thus produced. The jaw clonus is produced in a similar manner by suddenly throwing pressure upon the masseter muscles.

True clonus has the same significance as exaggerated knee jerk, and its relation to organic disease is most common in disseminated and lateral sclerosis. "If contractions appear before the degree of foot flexion exceeds a right angle and are evidently voluntary, irregular and fleeting, then one is dealing with spurious clonus, usually hysterical"[46]. Clonic convulsions are rapid involuntary muscular movements repeated in shocks or series of shocks with force and rapidity. They are never occasioned by peripheral excitation of the motor nerves. There appears to be an accumulative irritability centre whose action may be compared to that of the Leyden jar, and seems to be essential to set off the shock-like explosions. Clonic contractions are practically always accentuated either by direct or reflex irritation of the motor centre whether it be the nuclear or psycho-motor centre of the cortex. Tonic convulsions, long continued, produce rapid contraction of the muscle which may suddenly change by implication and position or tension of muscle. It may be associated with or transformed to the clonic variety. A joint firmly fixed by the muscle contracted about it so that its movements are difficult or impossible is a condition called a contracture. The increased tension of the muscle may depend on increased tonus. The active contraction is an irritative reflex contraction while the passive contraction is a nutritive shortening of muscle. Active contractures may occur where muscle tone is increased since muscular tone is of reflex origin.

Fig. 11.—Tracing of Knee Kick in Tabes Dorsalis. Lower band shows three points, at which time blow was struck on knee.

Bodwitch and Warren[47], in an article, say—"There is good evidence that clonus is a mechanical act the same as the knee jerk, hence should be similarly influenced by the peripheral nerve stimulation. Clonus may be reinforced or inhibited the same as a normal knee jerk of a healthy individual."

Ankle clonus presents a definite record by the graphic method that will materially assist

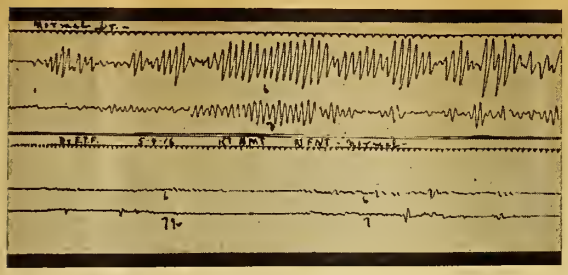

Fig. 12.—Records of Tremors, normal type.

in a better understanding of the work. To the unaided eye all clonus appears alike, but records show that there are three distinct types[60] due to fundamental genesis underlying as in a case of chronic lenticular degeneration, hematomyelia and primary sclerosis. A constant record may be obtained not only showing the rate and frequency of the clonus but also its strength as recorded by the width of oscillations and also the duration, whether maintained for some time or quickly dropping off, and the question of its fatigue is recorded in a permanent and definite manner Fig. 15.

The apparatus used in securing records of clonus is shown in Fig. 3. The arm band (Ss.) and pump of a blood pressure apparatus is fastened about the limb from which the record is desired. Tubing leads to the Marey tambour (R) which replaces the recording apparatus used in securing the mechanical swing of the knee jerk. Slight inflation is made with the pump. The electrodes are used as in securing the knee jerk and are attached to the string galvanometer.

TREMORS.

Among the earlier medical writers was Claudius Galen[48] who noted the fact that tremor existed and differed during voluntary movement and repose. Later Vieussens, in the latter part of the 14th century, was the first to point out the distinct and separate parts of the brain, and wrote extensively on the subject of tremors.

Haller[49], in 1708, in researches on irritability, established the existence of irritability as a property of living muscular tissue and that sensibility was due to the nerves alone.

Gilson[50], the successor of Harvey, in the middle of the 17th century brought out many new discoveries regarding nerve tissue. The doctrine of irritability, as taught by Haller, lead to a greater physiological study of nervous tissue.

James Parkinson[51], of London, in 1817 published his essay on shaking palsy and this is his greatest and most important contribution to Medicine. Parkinson's definition is—"Involuntary tremations, motion with lessened muscular power in parts not in action even when supported."

Tremors are rapid, minute muscular contractions with a rhythmic tendency. Tremor may appear in healthy individuals as well as in pathological states, hence the need of careful study and record. It may appear in normal individuals following physical exercises, mental agitation, cold, etc. Tremors are of two classes: (a) intention, or that occurring during purposeful movement, and (b) passive, or that tremor persisting during rest. Putting the individual muscle group in action or under continued strain increases tremor. All tremors of the extremities are increased by extension and may be wholly absent when the patient is at rest. Most tremors are a spastic phenomenon and the contres are located above the reflex arc.

Sahli[52] believed that tremors are essentially manifestations of spasm just as every spasm is explained by the damming up of stimuli which causes an explosive instead of a constant discharge of stimuli from the ganglion cells. It is analogous to the spark discharge of an induction apparatus in contrast to the spray-like brush discharge following low resistance. To continue the analogy to explosive discharges further, we see that the succession of impulses underlying tremors may be based on the stronger stimulation of the motor ganglion cells on the one hand through the central neuron (paralysis agitans and nerve excitability), or through the reflex pathways (multiple sclerosis) on the other, because of the interruption of the motor current (peripheral palsies, fa-

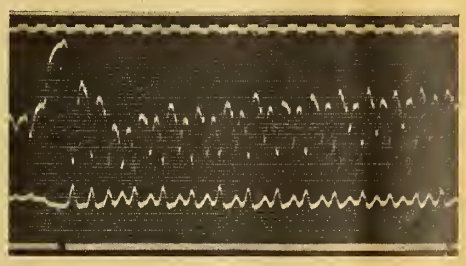

Fig. 15.—Record of Ankle Clonus.

Fig. 13.—Tremograph.

tigue, etc.) In all these cases there is the same disparity between the afferent and efferent nerve stimuli. This exposition is no mere hypothesis. It rests upon the well-known general recognized property of the ganglion cells to accumulate impulses and discharge them explosively though we have as yet no further explanation. It suggests a fundamental characteristic of nerve power which is a physiological observation. This brings us to a closer understanding of the different types of physiological tremor.

As has been stated previously, as a result of a careful study of the various irregularities that appeared upon our cardiograph records and finding that many of these finer movements were due to tremors, a more careful study of tremors was commenced, and soon the necessity was apparent of an apparatus that would graphically record the various movements of tremors. It was desired that this apparatus should be small and compact and capable of being used by the physician in general practice. Fig. 13. As a result of experiments, the writer presented the Tremograph,[60] Fig. 1 (L. S.), and demonstrated its use at the Minnesota State Medical Society in the fall of 1916. This apparatus is used in conjunction with the recording apparatus of the modified McKenzie Polygraph (B)[53], and gives a light, compact apparatus for making definite accurate records of tremors and clonus in a permanent form and with the time element portrayed, Fig. 14.

The Tremograph consists of two tambours (E) set at right angles, so placed that one is vertical and the other horizontal to the axis of movement. These tambours are connected with the tambours of the modified McKenzie polygraph by rubber tubing. (G). The movement to be recorded is accentuated by the placing of spring vibrators of steel wire (H) in front of the tambours. Metal olives (F) with screw adjustment to permit their being placed in different positions along the spring vibrators, increase the oscillations and give a marked record of the vibration. Various handles are used which permit the securing of different types of records. These can be screwed on to the apparatus and are used for securing records of different parts of the body. (A). Plain round handle (C) ordinarily used and held in either hand. (B). The tonometer (D) with screw socket placed on one end which permits the apparatus being used for securing pressure tremors. (C). The slightly curved plate 2''x3'' with two straps and buckles that permit placing it immovably on any part. This is especially used for tremors and used principally on the lower extremities.

In order to secure analogous records of patients under similar conditions, the following procedure is adopted. The patient is made as comfortable as possible, whether seated erect in a chair or in bed. If in a chair, the feet should be flat on the floor and the hands on the knees. The handle of the Tremograph is then placed in one of the patient's hands and held between the thumb and extended forefingers, the horizontal arm to the front. The patient is then instructed as to the motion to be made with the instrument. The following movements have been used by us in securing records as being representative of all voluntary movements.

1. "R. T." (R and L) "Rest Tremor". This record is secured by having the patient raise

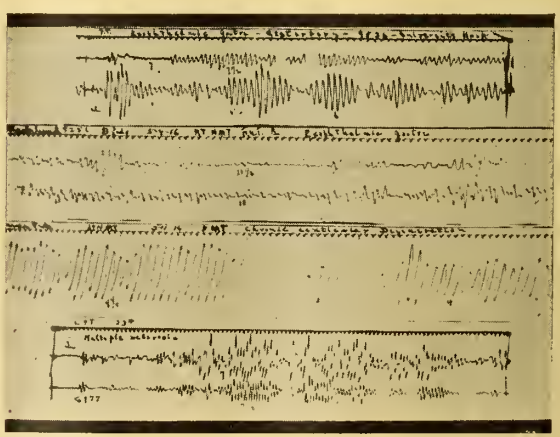

Fig. 14.—Records of Tremors:
a. Exophthalmic Goitre.
b. Exophthalmic Goitre.
c. Chronic Lenticular Degeneration.
d. Multiple Sclerosis.

the hand from the position on the knee, (a) front and upward to full extension of arm, (b) then holding arm at full extension, (c) then returning to knee position. These movements are made in a definite time—five seconds to each move or position, the rate of movement being indicated to the patient by the operator's arm. This is of advantage, as the attention of the patient is focused and any uneasiness relieved.

2. "P. T." (R and L). Pressure Tremor, same as Rest Tremor only tonometer is used as handle and held gently, arm raised (1) then at full extension, (2) the patient compresses handle to limit, then at (3) releases to gentle grip and return to knee. Record is made on slip of the grip pressure.

3. "F. N. T." (R and L) Finger Nose Test. The round handle (A) as used in (1) the movement consists of four positions, each occupying five seconds—as in (1), (a) knee to full extension, (b) then elbow is bent bringing the instrument, still vertical position, close to nose, then (c) back to full extension and (d) back to knee.

4. "R. T. Leg." (R and L). The metal pad (C) used and attached to top of foot. Each foot is brought up (a) to full extension, (b) held, then (c) returned to floor.

5. "F. K. T. of Leg." (R and L). Foot Knee Test. (C) attachment as in (4) movement (a) to full extension, (b) foot brought close to opposite knee, (c) back to extension and (d) back to floor.

This produces a series of tracings which cover practically all the common movements.

Tremors of the tongue may be tested by a little aluminum clip attached to one of the spring vibrators, and the tremograph attached to some solid object. The tongue is placed on the aluminum clip. For coarse tremors a smaller sized metal olive is used which produces a narrow oscillation of the writing lever.

In eliciting tremors by the older methods[54] "to distinguish between passive tremor and intention tremor, direct the patient to make some movement such as taking up and fastening a collar button, buttoning a vest, or drinking a glass of water. In this latter variety the tremor is greatly increased by the co-ordinate movement involved and indeed may be wholly absent when the patient is at rest. By resting the tips of the patient's fingers (Quinquad's phenomenon) upon the palm of the hand, a vibration otherwise imperceptible may be readily detected." This is the usual form of noting tremors by clinical methods. Though this does not give a definite estimation of the rapidity or the strength of the tremor, still with a careful observation by this method the clinician was able to determine whether the tremor was fine or coarse.

Many types of apparatus have been used to estimate and record graphically the various forms of tremor but all of them were cumbersome and complicated for common use.

Warner[55], in the early eighties, brought out interesting but complicated apparatus consisting of an arrangement of rubber tubes, one for each finger, and each leading by the piece of tubing to an elaborate apparatus with a smoked drum, the frame supplied with recording tambours and electric signals. By means of this apparatus he brought out some interesting figures on the movements of the hand and its various parts.

Various other devices were used and much valuable data has been gathered by[56] Grashey, Schafer, Peterson, Horsley, Wolfenden, Ewald, Gowers and Dana. Peterson[57], in 1894, published very interesting results of exhaustive work on tremors. From these records A. E. Hennely of the Edison laboratory constructed a very interesting geometrical chart of the recorded waves. In his summary Peterson says —"Compared with the kymograph, the sphygmograph is coarse, crude and uncertain in the reproduction of various tremors. Most tremors can be placed in two categories—fine, from 10 to 12 per second: and coarse, from 7 to 8 per second, corresponding to the normal innervation rhythm as determined by Horsley and Schaefer[58]. A slight tremor with normal innervation wavelets which are fused in groups of two gives the rate of 5 per second."

In a study of tremors by Neustaedter[59] in 1909, he brought out a new type of apparatus. By means of this apparatus a careful study of various types of tremors was made in some 600 cases of pathological type. His conclusions are as follows: "1. I want to say that the difference between different tremors are of kind, not of degree, and each form of tremor is distinctive of a

form or group of diseases. 2. No definite relation exists between one form of tremor and any other. 3. The frequency of movements has no bearing upon the character of the tracing. 4. There is no material difference between the movements of the two sides of the body."

CONCLUSIONS.

1. Graphic records of reflexes, clonus and tremors may be secured

a. By means of the string galvanometer,

b. By means of apparatus recording movements of the regions involved, i. e., mechanical action. Such records may be designated broadly as reflexograms.

2. Graphic records of reflexes may be secured showing the form of electrical and mechanical response and also time elapsing between—

a. Stimulus and electrical response in muscle.

b. Stimulus and mechanical response of parts.

c. Electrical and mechanical responses.

3. In the normal reflexogram two elements are found:

a. An initial deflection of short duration—probably a definite reflex response. This appears to be present only in the records of electrical response.

b. Definite responses due to muscular action. These show both in the records of electrical and mechanical response. These responses may be reinforced, e. g., by Jendrassik's method, or inhibited, e. g., by psychic factors, producing probably a state of tension or resistance in the muscles involved.

4. Tonus plays an important part in the reflex act. Modifications may be due to an abnormal state in the afferent or efferent segments of the reflex arc and to conditions above the reflex arc.

5. In the reflexograms from abnormal individuals, the records may show modification of the reflex response (diminution, exaggeration or perversion) due to altered conditions from fatigue, drugs and pathological conditions in the reflex arc and in the upper neurons.

6. These records are so consistent, definite and permanent as to have a medico-legal value.

7. Irritability may be increased, in varying degrees and when this is sufficient, clonus may be produced. Clonus records show rate, amplitude, duration, response to increase of pressure by the manipulator, and fatigue.

8. Records of tremors show rate, rhythm and amplitude. Tremor occurs in normal individuals and in them is increased by voluntary movement. Tremor is modified in individuals, otherwise normal, by such factors as toxic states, fatigue and drugs. In abnormal individuals alterations in rate, rhythm, amplitude and effects of voluntary movement are recorded.

BIBLIOGRAPHY.

1. Hall, Marshal. History of Med., Davis, '03.
2. Miller, J. H. (1809). Ibid.
3. Brachet, Ibid.
4. Bell, Sir Chas. (London). Ibid.
5. Morton, George (Phil. '39). "Grania Americanae."
6. Magnedie Floures (Barker).
7. Smith. H. H., (Barker).
8. Westphal and Erb., Arch. f. Spychiartrie, Vol. V, 1875, p. 792. Berl. Klin. Wochen., '81, Vol. 18. Ibid., '78.
9. Fürbringer, Centralblat. f. med. Wissenschr., 1875, p. 929.
10. Rosenthal and Mendelsohn,—Monatschr. d. Roüiel Akadem. su. Berl. Feb. '73. Konigl. Preuss Akad. Berl., '82, '83, '85. Neur. Centralblat. '97, p. 878.
11. Gad and Flateau, Neurol. Centralblat, 1896, p. 147.
12. Sherrington, Phil. Trans. Roy. Soc. Lond., 1898, p. 136.
13. Margulies, Wien. klin. Rundschau, 1899, pl. 925.
14. Turner, Stewart P.: J. N. and M. Dis., June, 1902, Vol. 29, No. 6, p. 321.
15. Buchanan: Jour. of Physiol., Vol. xx, p. 95-190. Ibid. Vol. vxi, p. 384, 1899.
16. Waller, A. D.: Lancet, 1881, Vol. 2, p. 83. Jour. of Physiol., Vol. vxi, 1890, p. 384. Brain, 1880, p. 179.
17. Lombard: Inter. J. M. Sc., 1887, p. 88.
18. Sahli: Treatise on Diagnostic Method of Examination, 1914.
19. Jendrassik: Beitrage zur lehre vor den Schneureflex, A. F. K. M., 1883.
20. Lombard: Loc. Cit. 17. Also, Jour. M. and N. Diseases, Feb. 1890.
21. Bodwitch and Warren: Bost. Med. and Surg. Jour., May 31st, 1888. Journ. Physiol., Vol. xi, 1890, p. 384.
22. Waller: Loc. Cit. No. 16.
23. Lombard: Loc. Cit. No. 17. Also, Jour. Med. Sc., Jan. 1887.
24. Lanfanauer's method (Sahli).
25. Schonborn's method (Sahli).
26. Phelps, R. M.; N. W. Lancet, St. Paul, Vol. xii, p. 399.

27. Phelps, R. M., Loc. Cit. No. 26.
28. Noys: Amer. Jour. Psychol., April 1892.
29. Salhi: Loc. Cit. No. 18.
30. Lombard: Loc. Cit. No. 17.
Waller: Loc. Cit., No. 16.
Piper, Kriel: Arch. f. ges. Physiol. Vol. cxix, 1907, p. 301. Zeitschr. f. Biolog. Vol. L. 1908, p. 393-504.
Buchanan, Florence: Quart. Jour. Exp. Physiol., 1908.
Bodwitch: Jour. Physiol., Vol. xi, 1890, p. 25.
31. Lombard: Amer. Jour. Physiol. 1887.
32. Waller: Loc. Cit. No. 16.
Erb: Loc. Cit. No. 8.
Lombard: Loc. Cit. No. 31.
33. Waller: Loc. Cit. No. 16.
34. Waller: Loc. Cit. No. 16.
35. Waller: Loc. Cit. No. 16.
36. Diller: Penn. Med. Jour. 1899, Vol. 3, p. 44.
37. Mitchell, S. W. and Lewis, M. J., Med. News. 1886, Feb. 13. p. 20.
38. Sahli: Loc. Cit. No. 18.
39. Mitchell, S. W. Loc. Cit. No. 37.
40. Lombard: Loc. Cit. No. 31.
41. Sahli: Loc. Cit. No. 18.
42. Westphal: Loc. Cit. No. 8. Berl. Klin. Wochen. 1878.
43. Lombard: Loc. Cit. No. 31.
44. Mitchell and Lewis: Loc. Cit. No. 37.
45. Piper: Loc. Cit. No. 30. Also, Arch. f. d. ges. Physiol. Vol. cxix, p. 301, 1907. Zeit. f. Biolog., Vol. L, 393-504, 1908.
46. Med. Diagnosis, 1907.
47. Bodwitch: Loc. Cit. No. 30. Also, Jour. Physiol. Vol. xi, 1890, p. 25.
48. Rowntree: Johns Hop. Hosp. Bull., Vol xxiii, No. 252, 1912.
49. Provost and Waller: Rev. Med. Sciesse-Romande, June 15, 1881.
50. Provost and Woller: Loc. Cit. No. 49.
51. Rowntree: Loc. Cit. No. 48.
52. Sahli: Loc. Cit. No. 18.
53. Morris, R. E.; J. Amer. Med. Assoc., Vol. lxvi, 1916, p. 1922.
54. Loc. Cit. No. 46.
55. Warner: Med. News, Philadel., 1892. Also Jour. Physiol., Aug. 3, 1884.
56. Grashey: Arch. f. Psych., 1885
Schafer and Horseley: Jour. Physiol., Vol. 5.
Peterson: N. Y. Med. Jour. March 10, 1894.
Wolfenden: British Med. Jour. May 19, 1888.
Ewald: Berl. klin. Wochen., 1883, No. 52.
Gowers: Dis. of Nervous System, 1888, p. 1001.
Dana: Medical News, Dec. 12, 1892.
57. Peterson: Jour. Nerv. and Ment. Dis., Feb. 1899.
58. Horsley and Schafer: Journ. Physiol. Vol. 5.
59. Neustaedter: Med. Record, N. Y., 1909, Vol. xxvi, p. 91.
60. Morris, R. E.: Journal Lancet, 1917, xxvii, p. 423.

STUDY X: THE ETIOLOGY AND TREATMENT OF ACUTE POLIOMYELITIS*

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The studies I have made on the elective localization of bacteria indicated that the methods used in studying the localizing power of the bacteria isolated by a number of observers in poliomyelitis, were not adequate to rule out their possible etiologic relationship. The results in herpes zoster were especially suggestive. Green producing streptococci, it will be recalled, were isolated from tonsils, pyorrheal pockets and sputum, and from the spinal fluid at the height of attacks of severe herpes zoster which, when injected intravenously into animals, produced herpes associated with lesions and localization of the streptococci in the posterior root ganglia. The infiltration in the posterior root ganglia in herpes zoster is similar to the infiltration of these ganglia in spontaneous experimental poliomyelitis.

Head and Campbell regard herpes zoster as an acute infectious disease which confers immunity, and suggest that it be designated as acute posterior poliomyelitis in contradistinction to acute anterior poliomyelitis. The possibility of a close relationship of the microbian cause in these diseases is further suggested by the observation of Romer who found that the serum of patients with herpes zoster neutralized the virus of poliomyelitis. Owing to these results a re-study of the bacteriology and the localizing power of bacteria of ordinary size obtainable from the throats and tonsils and from the nervous system in poliomyelitis, was undertaken. That the pleomorphic streptococcus found in such large numbers in throat and tonsil and in smaller numbers in the nervous system bears etiologic relationship to poliomyelitis is indicated by facts determined since my studies were begun two years ago as follows:

It is constantly present in the diseased tissues, from which it may be cultivated even many months after glycerolation. On injec-

*Presented before the Minnesota State Medical Association August 29, 1918, Duluth.

tions of cultures into young rabbits and guineapigs it localizes specifically in the nervous system and produces flaccid paralysis and changes in brain and cord which resemble those in poliomyelitis in man. From the brain and cord of these animals the organism may be isolated and the disease again produced. The organism has been rendered filtrable. By means of the same methods the identical organism has been isolated constantly from the brain and cord of monkeys paralyzed with fresh, glycerolated and filtered virus. The serums of persons and of monkeys having recovered from poliomyelitis, agglutinate specifically the more sensitive strains both from human and monkey poliomyelitis. Injections of the recently isolated aerobic cultures into monkeys renders them refractory to virus. The aerobic form of the organism from human and monkey poliomyelitis produces antibodies in the serum of horses, in a large amount common to both, cross-agglutinating these strains specifically in high dilution. The serum of a horse immunized with freshly isolated strains from monkeys protected monkeys relatively against intracerebral inoculation of virus and had pronounced curative effects in the treatment of human poliomyelitis. Early intravenous injections were followed by almost immediate cessation of symptoms in a large series of cases.

The results of Flexner and Noguchi, so far as the cultivation of a small filtrable organism and its demonstration in the tissues in poliomyelitis are concerned, have been corroborated, but the results of our experiments indicate that this is the anaerobic and, according to Amoss' results, a nonantigenic form of the organism which, under aerobic cultivation, clearly belongs to the streptococcus group of microorganisms. Both forms have been constantly demonstrated side by side in the tissues of poliomyelitis. Flaccid paralysis coming on soon after injection has been produced in monkeys with characteristic, although not typical changes in the cord with aerobic cultures, but the classic picture as obtained with virus in this species has not been secured.

It may be suggested, however, on the basis of results already obtained, that this is due to the development of antibodies, since the organism in the aerobic form has marked antigenic powers.

The serum used in the treatment of cases heretofore was prepared by injecting freshly isolated strains from the brain and cord of monkeys that had succumbed to experimental poliomyelitis. During the past year, owing to the inability to procure monkeys on account of the war, the method of preparing the serum had to be modified and the strains for injection were isolated from glycerolated poliomyelitic material. Opportunity further to study this disease and to test the efficacy of the newly developed serum was afforded in the recent epidemic of poliomyelitis in Dubuque, Iowa. The results of animal experiments obtained in two previous epidemics were verified and extended. Conditions for studying the effects of the serum were ideal. The epidemic had begun two weeks previously. The number of cases were increasing and continued to increase for two weeks after the serum treatment was begun, and then gradually subsided. The symptoms and paralysis were marked. The mortality rate was high; eight of the seventeen patients who were reported as having the disease died and most of the others showed marked paralysis. Three patients died during the night immediately prior to the use of the serum. In four of the eleven patients treated with the serum on the first two days the prognosis was most unfavorable. The serum was administered to all patients irrespective of the stage of the disease. The diagnosis was established by spinal puncture. The mortality rate dropped from 47 per cent before to 4 per cent after the serum treatment had been instituted. Altogether fifty-four patients were treated. These may be considered in three groups: (1) those without paralysis; (2) those with slight paralysis, and (3) those with advanced paralysis at the time of the serum treatment.

There were twenty patients in the first group. All recovered without developing paralysis. There were fifteen patients in the second group. The paralysis was arrested in all but three in whom slight extension occurred. All have recovered completely or are showing rapid improvement. There were nineteen patients in the third group; two died. One was a poorly nourished weak baby two weeks

old, who showed no distinct paralysis but had refused nourishment during a period of seven days and gradually grew weaker and died seemingly of malnutrition. This is included as a case of poliomyelitis almost wholly on the spinal fluid findings. There were a positive globulin test and 40 cells per cm. One subcutaneous injection of 6 c.c. of serum was given with no apparent effect. The other death was in the case of a girl of 18 years, who had been severely ill for four days. A rapidly progressing paralysis of the ascending type began thirty-six hours previously. At the time of the first injection there was practically complete paralysis of both lower extremities, paralysis of the muscles of the back, of the bladder and rectum, of the left arm, a marked weakness of the muscles of the right arm, neck and muscles of deglutition, and marked shortness of breath with cyanosis owing to involvment of the muscles of respiration. The temperature was lowered and the paralysis was arrested for forty-eight hours. Eighteen hours after the third injection of serum respiratory embarrassment recurred and the patient died twelve hours later.

In the remaining seventeen patients the paralysis was arrested in those in which it was progressing. A distinct improvement in muscle function occurred soon after injection in those in whom the paralysis was stationary. Post-paralytic pains, if still present, were relieved, as long as ten days after onset in those in whom the spinal fluid still showed evidence of activity of the process. It is too soon to give the details of the final outcome in these cases. The preliminary results show, however, that the newly developed serum has distinct curative power in poliomyelitis. The results moreover indicate that the loss of muscle-function in the early part of the attack is due, in large part, to inhibition of physiologic function, and not to death of the ganglion cells in the anterior horns. The amount of good which followed the injection of serum was quite in proportion to the time of the injection following the onset of symptoms. Hence, in order to obtain the best results, the injection of serum should be given at the earliest possible moment, preferably before paralysis has begun, and before infiltration and edema in the anterior horns has become marked.

Dead ganglion cells can not regenerate and not too much should be expected from the injection of serum when their death has occurred. This disease has a quite characteristic syndrome which should lead to its tentative diagnosis and to immediate spinal puncture. However, there are some cases in which the premonitory symptoms are so slight as to escape notice; the paralysis sometimes is the first noticeable symptom. Hence the final solution of the problem of poliomyelitis must come from prevention, and from prophylactic immunization with a suitable antigen. Experiments along this line are now in progress.

Abortive attacks were numerous in this epidemic. Many children had symptoms resembling those of poliomyelitis which were too vague to lead to a positive diagnosis. A careful study of the state of health of others in the family in which typical cases occurred, and of the general health of the community at the time of the epidemic, the details of which will appear subsequently, brings with it the conviction that a large proportion of the population harbored this infection and that only one case out of the usual number (1 in 600 to 1 in 1,000 inhabitants) developed the typical syndrome recognized as poliomyelitis. From the studies I have made the infection appears to be due to a form of streptococcus (using this term in the broad sense) having peculiar localizing powers and specific immunologic reactions. In this connection it is of interest to note that the incidence of poliomyelitis in families and the community at large during epidemics in summer, is about that of rheumatic fever or pneumonia during the colder seasons when the more virulent streptococcal respiratory and tonsillar infections are prone to occur in epidemic form.

References

1. Head, H. and Campbell, A. W.: The pathology of herpes zoster and its bearing on sensory localization. Brain, 1900, xxiii, 353-523.

2. Romer, P. H. Epidemic infantile paralysis. New York, Wood, 1913, p. 171.

3. Rosenow, E. C.: Elective localization of streptococci. Jour. Am. Med. Assn., 1915,

lxv, 1687-1691. Elective 'ocalization of bacteria in diseases of the nervous system. Jour. Am. Med. Assn., 1916, lxvii, 662-666.

4. Rosenow, E. C.: The etiology and experimental production of herpes zoster. Jour. Inf. Dis., 1916, xviii, 477-500.

5. Rosenow, E. C. and Wheeler, G. W.: The etiology of epidemic poliomyelitis. Jour. Inf. Dis., 1918, xxii, 281-312.

Rosenow, E. C., Towne, E. B. and v. Hess, C. L.: The elective localization of streptococci from epidemic poliomyelitis. Jour. Inf. Dis., 1918, xxii, 313-344.

Rosenow, E. C. and Gray, Hazel: Agglutination of the pleomorphic streptococcus isolated from epidemic poliomyelitis by immune serum. Jour. Inf. Dis., 1918, xxii, 345-378.

Rosenow, E. C.: Report on the treatment of fifty-eight cases of epidemic poliomyelitis with immune horse serum. Jour. Inf. Dis., 1918, xxii, 379-426.

POLIOMYELITIS: AN EPIDEMIOLOGICAL STUDY WITH SUMMARY OF AFTER-CARE TREATMENT IN MINNESOTA*

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Wickman, as early as 1907 formulated the theory that poliomyelitis was spread by contact from person to person, that non-paralyzed or abortive cases were very numerous and played an important part in the transmission, that healthy carriers existed and might disseminate the disease. He compared epidemics of poliomyelitis to forest fires which died out only after all available fuel had been consumed. Assuming Wickman's idea of the widespread character of poliomyelitis to be true, it must be the exception rather than the rule to have paralysis. If there are many mild cases it must be more contagious than heretofore regarded and the ever important well carrier must be considered as probable factor in transmission.

By studying the incidence of paralyzed cases only, the disease may be considered to be but slightly contagious. If, however, the disease in a mild form is very common and paralysis is the exception, then by improving our methods of diagnosis so as to include all non-paralyzed cases, carefully compiled field data would doubtless show marked contagiousness probable

Recent epidemiological and experimental studies strengthen our belief that Wickman's conception is correct.

During the past five years the writer has had opportunity to study a large proportion of the frank and suspected cases of poliomyelitis reported to the State Board of Health. The accompanying table gives number of reported cases for the past nine years.

Year	Cases	Deaths
1910	481	201
1911	115	58
1912	35	23
1913	85	30
1914	22	8
1915	123	26
1916	912	105
1917	75	10

In the epidemic of 1909-10 it is estimated there occurred at least 2,100 cases. During the five years following, an average of about 75 cases annually occurred.

In the epidemic of 1916, 912 cases have been recorded and studied. Seven hundred forty-one of the 912 cases showed paralysis with 105 deaths (14%). By including the 171 non-paralyzed cases, without deaths, the death rate is reduced to about 10%. Of the 741 paralyzed cases, 52 cases are assumed to be secondaries, there having been 3,339 persons exposed in the immediate families in this group.

In the whole group of 912 cases, 145 have been considered as probable secondaries while the number of persons intimately associated is only 3,675. This is an increase of two and one-half times the number of secondaries in the group of paralyzed cases. In this study only non-paralyzed cases which gave a history of exposure to a known paralyzed case have been included. Obviously, a great many non-paralyzed cases must have occurred which could not be included.

The writer will only attempt to give some impressions and observations from his studies together with a few isolated instances from the 1916 epidemic which appear to show that this

*Read before the Minnesota State Medical Association at Duluth, September, 1918.

disease is transmitted quite directly from person to person. In collecting data on epidemic cases in outlying districts the best opportunity is offered for tracing associations. Every endeavor to prove that there are other modes of infection have failed. While the seasonal prevalence like that of typhoid fever, diarrhea, dysentery and other gastro-intestinal disorders might suggest insect transmission, all data studied gives little or no evidence along this line. Few cases, less than a dozen, showed bites of insects. Nothing could be found pointing toward dust as a possible factor. In all observations the incidence of cases bore no relation to sprinkled or dusty streets.

Evidence of the identical disease among the lower animals has been sought through the study of the central nervous system of domestic animals presenting paralysis or paresis of certain muscles or group of muscles. In some cases the examination followed death from the diseased condition of the animal, in others the animal was killed. Eighteen or twenty such examinations have been made, the autopsies, for the most part, being done in our own laboratories, the microscopic studies being done by different members of the staff of the Department of Pathology, University of Minnesota. No evidence of this disease occurring spontaneously in animals has been found.

Immunity seems to be an important factor in limiting the disease. One attack apparently protects for life. A second attack has never been noted although a number of incidences have been observed where the disease has entered the family a second time after intervals of years, picking out one or more non-immunes.

Several sections of the state were of especial interest epidemiologically during the 1916 epidemic. Winona, a city of 18,000 ,located in the southeastern part of the state on the Mississippi river, compares favorably with other sections of the state from a sanitary standpoint. A system of rigid inspection has placed Winona's standard for dairies on a very high plane.

At the beginning of the outbreak the physicians were thoroughly awake to the seriousness of the situation through recalling the epidemic of 1909-10. They called a meeting of the County Medical Society and passed recommendations which were published in the local papers. Suspected cased were to be reported to the local health officer at once. Parents were advised to keep children at home. Children were forbidden to attend movies, Sunday schools, parties, picnics and all public gatherings except that public baths and playgrounds were kept open on the ground that open air association of well children would be safe. The public was greatly alarmed and many children were kept at home. No new cases developed for twenty days, then five or six cases occured in children who frequented the public baths or play grounds. Upon visiting the baths it was found that children dressed and undressed in two large rooms which were overcrowded, there being ample opportunity for the exchange of nose and throat secretions.

In all 34 paralyzed and 2 non-paralyzed cases with 13 deaths (38%) were recorded. During July and August, at which time the height of the epidemic occured, the physicians reported that at least 300 infants and children had gastro-intestinal disturbances which could not be diagnosed as non-paralyzed cases of poliomyelitis. Many, however, had muscular pains, hyperesthesia, ataxia, muscular weakness and trembling together with slight rigidity of neck, all of which are suggestive symptoms of poliomyelitis. It is unfortunate that an epidemiologist could not have been detailed to the intensive field study of this part of the state-wide epidemic. One cannot but speculate as to the probability of many unrecognized mild cases in this community and the apparent high death rate may be interpreted to suggest it. Here it seems probable that the epidemic abated as the individuals acquired immunity.

Millwood Tp., Stearns Co., is located five miles north of Freeport village. The population consists of well-to-do German-American farmers closely related by marriage and religion. Their school, postoffice, general store and creamery are grouped about the St. Rosa church. There is no record that poliomyelitis ever visited this section.

Two orphans were sent from an asylum in New York City to Minnesota for adoption, one to Minneapolis, the other to Millwood Tp. On arrival in Minneapolis one child, boy, G. S. was sick, having sore throat, nausea, vomiting and rigidity of the neck, but more

definite symptoms necessary to classify this as a case of poliomyelitis did not develop.

The orphan* girl F. W. (2) had no symptoms. On June 18, on the third night after going to Millwood Tp. she slept with a four year old boy, the only child of her foster parents. The boy developed symptoms June 28, was paralyzed June 30 and died July 1. A public funeral was held at the St. Rosa church several small boys acting as bearers. A large dinner closed the occasion.

Following the funeral within one week two cases developed in persons who attended the funeral. The remaining Millwood cases developed in persons who attended the funeral or who were exposed to cases.

The introduction of the disease into Melrose Tp. may be explained as follows: T. N. buttermaker, Millwood Tp., boarded in the home of a paralyzed case in which the first symptoms were on July 29. T. N. denied being sick at ant time. On Aug. 13, he visited a home in Melrose Tp. where he and his two companions drank water out of a glass. Nine days later, Aug. 22, a seven year old boy in this family developed symptoms, was paralyzed on the 11th day and died after four months. Two other children had symptoms without paralysis.

The introduction into Todd Co. may be explained as follows: J. B. worked in Stearns Co., at the home of a child who was a non-paralyzed case, whose first symptoms were on July 4. J. B. is said to have been slightly ill for a few days but he himself denied having been sick. Frequent visits in Todd Co. made by him and his companion, a boot-legger, were followed by the development of a frank case of poliomyelitis in family visited. Other cases developed in exposed persons

In all, there were 50 cases of poliomyelitis in Millwood and adjoining townships in Stearns and Todd counties as follows:

Millwood Tp., Stearns Co.—36 cases 8 paralyzed, 1 death.

Melrose Tp., Stearns Co.—6 cases, 3 paralyzed, 1 death.

Grey Eagle Tp., Todd Co.—6 cases, 3 paralyzed, no deaths.

Barnham Tp., Todd Co.—2 cases, both paralyzed, no deaths.

*On inquiry by Dr. H. M. Bracken, it was found that there had been no recognized case of poliomyelitis in the asylum although a severe epidemic was present in and around New York at the time.

The facts concerning the spread of the infection in this section appear to confirm the theory of the spread of poliomyelitis through contact with cases or well carriers.

In Deer Creek V., Ottertail Co., Mr. L's. two sons, William (7) and Paul, (13), had first symptoms on July 6. Mr. L's. daughter, aged 10, and her cousin, aged 8, who with her mother from Minneapolis, had been visiting in the family, beginning July 4, developed first symptoms July 13. Paul was but slightly ill and went to work July 8, on the farm of Mr. S. two miles north of Deer Creek. He worked two and one-half days though not feeling entirely well, then rested one-half day. He again went to work July 11, but was unable to work the whole day, and became a frank case. Two sons of the farmer where Paul worked developed symptoms on July 19 and 24 respectively. The latter died July 27. An autopsy by Dr. H. E. Robertson of the Department of Pathology and Bacteriology, University of Minnesota, confirmed diagnosis. The father of these two boys had a sore throat, complained of feeling tired and of having a thick tongue soon after the first boy was taken sick, while the mother had pain in right shoulder and arm July 21. All except the oldest son drank out of the common dipper at pump, and he alone escaped all symptoms of illness.

In a family that lived next door to the L. family, there were two frank cases with first symptoms on July 13 and 15, and paralysis in both on July 19. Another child fell ill, having headache on July 15. Poliomyelitis in these two families was not recognized until after the death in the farmer's family above mentioned.

In Chester Tp., Goodhue Co., Frances P, (7) had first symptoms Aug. 3 and was paralyzed Aug. 9. Henry L. (10) from Montana, who was visiting his grandmother, a neighbor of the P. family, stopped to play with other children of this family on Aug. 6. He had just bought candy at the nearby store and all partook of his candy. Four days later Henry L. had first symptoms, was paralyzed Aug. 13.

In Little Falls, Bert G. (4) had first symptoms July 16, was paralyzed July 19. Poliomyelitis prevailed in Minneapolis at this time and Mr. and Mrs. G. V., of Minneapolis had been visiting in the G. family from July 13 to 15.

Mr. and Mrs. Frank D. of East Grand Forks and their three children who had also been visiting in the G. family, left for home on July 14 and stopped in Osakis with friends until July 21. A child in this Osakis family became sick July 22 and was paralyzed July 24.

The above are only a few of the instances which might be cited from my field experience. They merely confirm other epidemiological and experimental data. The greatest care was exercised in making the diagnosis of poliomyelitis in all cases, 153 suspected cases seen during the 1916 epidemic being ruled out.

Before taking up the after-care of poliomyeltis cases, I wish to report to you, for its timely interest, the present status of this disease in our midst.

Throughout the state exclusive of Houston and Fillmore Counties there have been 14 cases in 1918, 7 occuring during the summer months, June, July, August. These cases have occured in 13 sanitary districts in 12 counties.

Since June there has been a local epidemic in the southeastern section of Minnesota along the Iowa border. The center of this epidemic is in and around Spring Grove. This section of the state consists of a rolling country with a great many bluffs which extend toward the Mississippi River. A branch of the Milwaukee Railroad connects the villages in this part of the state and gives the inhabitants one train each way a day. Most of the travel is toward La Crosse. The farmers in this section are mostly Norwegians and are quite isolated from other parts of the state. The physicians state that poliomyelitis has not visited this section since 1907-08.

The earliest recognized case was in Preble Tp., Fillmore Co., first symptoms June 12. To date there have been 36 cases, 19 paralyzed, with 8 deaths. Thirty-one of these cases have occured in 10 sanitary districts in Houston and Fillmore Counties, while two cases are just over the boundary line in Allamakee County, Iowa.

The epidemiological study has been omitted though some interesting data has already been collected.

After-Care Treatment

It is desired at this time to merely bring before you a brief summary of the after-care work of poliomyelitis cases as carried out by the State Board of Health. This work was made possible by a special grant of the legislature at its last session.

The following table shows the number of poliomyelitis cases examined by the After-Care Clinic.

Classification of New Cases Examined

	Before 1916	1916	1917	Not Poliomyelitis
1st Series	462	470	9	110
2nd Series....	248	54	32	68
3rd Series....	224	39	10	62
	934	563	51	240

In the three series of clinics which have been held since June, 1917, at 22 different centers in the state, 1,548 persons suffering from the results of poliomyelitis have been examined and advised. In addition 240 persons were examined and informed that their trouble was due to some other cause than poliomyelitis.

The total number of persons examined at all clinics including old and new cases, 2,764.

Recommendations of Clinic

	1st Series	2nd Series	3rd Series
Exercises.....	320	311	444
Supports.....	376	60	114
Braces.....	47		
Operations...	148	71	34

Recommendations for operations have been made to the attending physician with the expectation that an orthopedist would be consulted. Brace cases for the most part have been treated the same way, only a few minor braces being supplied at the request of the physician in attendance. All indigent children are put in touch with the State Hospital for Crippled and Deformed Children. Other needy cases have been put in touch with some one of numerous hospitals in the twin cities and elsewhere which made very generous reductions of their rates to these patients.

At the present time 1,155 persons are under the direct supervision of the 8 district nurses who make frequent visits aiding in the carrying out of directions given by the clinic. Nearly three-fifths of old cases examined in the last series of clinics, May, June, July, were

reported as improved. A small number were advised that further treatment is unnecessary.

It should be kept in mind that the value of this work is due not to superior knowledge or ability of any set of workers over that possessed by others trained in orthopedic work, but rather to the carrying along with the advice to the too often discouraged parent or patient much encouragement and stimulating assistance through aiding in the carrying out of details.

The public press has given assistance through its interest in the work and its willingness to give notices of the clinics. The public, especially through certain clubs and certain social and business organizations, has shown great interest and contributed very materially in furnishing rooms, telephones, typewriters, etc., for the use of the mobile clinic.

The physicians throughout the State have very largely helped to make this after-care work undertaken by the State Board of Health, a success and their co-operation has been much appreciated by the members of the Division Staff.

"RICKETS"*

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In presenting this subject for consideration, I intend to dwell largely upon the clinical symptomatology. The large number of children who are brought to the physician because of symptoms arising entirely from the disease entity known as rickets, and the frequency with which this condition is overlooked, necessitate its repeated discussion. In a series of one hundred cases reviewed for this paper, the complaint of failure to walk at the usual age occurred twenty-two times. In the remainder of the cases in which the diagnosis of rickets was made, the complaint was due almost invariably to a symptom of that disease. Curiously, only one child was brought to us because of "head sweating," a very common manifestation. Too much emphasis can hardly be laid upon the necessity for early treatment and also upon the sad outlook for the neglected cases.

*Presented before the Annual Meeting of the Minnesota State Medical Association, Duluth, August 28-30, 1918.

The usual study of a disease demands that we look into the etiology. Theories concerning the cause of rickets are so numerous that I cannot take the time even to touch upon them. From clinical observation, it is possible to state that two factors are important. First, a latent predisposition due to specific heredity, the nature of which is still unknown; second, manifest intra and extra uterine injuires to the growing organism. Among the former, we may include prematurity and twin pregnancy, and among the latter, improper food, bad housing conditions and improper care. Our series includes four twins and four premature infants.

The disease is encountered in infants as young as two months and as late as the fourth year. The acute cases in which the symptoms are macroscopically and microscopically recognisable are most common between the sixth and eighteenth months. Geographically, the disease is confined to the civilized countries of the temperate zones. Certain races are more prone and we all recognize the extreme deformities seen in the negro and in the offspring of the emigrant from southern Europe.

Pathologically the greatest changes, both microscopically and chemically, are found in the osseous system. The periosteum and bone marrow are hyperaemic and hyperplastic, resulting in spongy exudates which later may become calcified. The bones, as a result of insufficient calcification or entire absence of mineral deposits or even the absorption of salts already deposited, are soft and under stress of muscle action and body weight deformed.

The exhaustive chemical researches of Shabad and his pupils, long prominent in medical literature, have added much to our knowledge of the disease. His findings show that the bone of newborn infants contains 60-65% mineral ash. This decreases up to the second year, when it again begins to go up until it reaches the adult normal of about 80%. In severely rickitic bone, the ash may fall as low as 20%. Calcium and magnesium salts are most markedly reduced. Gassman has identified a complex calcium and phosphorous salt which is the same in diseased and healthy bone. The latter author finds that the potassium, sodium and chlorin are the same in

both, but magnesium is markedly decreased in the rachitic and concludes that magnesium plays a part in the pathology.

In the acute stages of the disease, the balance between intake and extretion is diminished or negative, later it may again become normal even though the disease remains active and progressive. The increased excretion takes place entirely through the intestines, the excretion through the urine being decreased. Stoeltzner maintains that experimental rickets produced by feeding animals food poor in calcium content is anatomically, chemically and clinically identical with spontaneous rickets. A series of blood examinations by Findlay shows that in active and uncomplicated rickets, anaemia is not the rule but to be regarded as due to external causes.

The clinical symptoms in the osseous system permit of a didactic division into four groups:

1. Symptoms of delayed bone formation.
2. Symptoms of bone disappearance.
3. Symptoms of bone softening.
4. Symptoms of excessive and abnormal bone formation.

In the first group are placed those cases which suffer from failure of longitudinal growth of the various parts of the osseous system. These may or may not show deformity. The affection of the vertebra causes shortening of the trunk. The delay of the growth of the jaws, aside from the resulting malposition of the teeth, gives the normal sized cranium the appearance of being too large. The failure of the development of the long bones results in various degrees of dwarfing. Furthermore, the acute stage may cause a complete cessation of longitudinal growth. Together with the abnormal muscular flaccidity and painful periosteal processes, this may cause marked delay in the acquirement of the static functions at the proper time so that the child does not creep, stand or walk as early as the well infant. They do not balance the head, cannot sit up and refuse to put the feet down when held upright. In the cranial bones, this delay of growth is seen in the persistence of the open fontanel, which may remain patent as late as the third year. Dentition is always delayed in the rickitic infant. In the series in which seventy-five cases were over eight months old, severely retarded dentition was noted in twenty-eight. Enamel defects are very common.

In the second group, we have a very manifest symptom which is easily elicited and appears early; namely, cranio-tabes. This is the softening of areas of the occipital and the posterior portions of the parietal bones. When the hands are placed firmly around the head, the fingers dent the parchment-like occiput as though they were pressing an old stiff hat. The symptom may appear alone. It is found only during the first year. This condition was encountered thirty-two times in the series, in which there were fifty-six infants under a year of age. When combined with "head sweating," the excessive perspiration of the occiput, we are justified in making a diagnosis of rickets and instituting treatment.

The last two groups include the largest number of clinical manifestations and the grouping often becomes indistinct because of their frequent synchronous occurrence. As a symptom of bone softening, we have the appearance of Harrison's groove, the softened ribs being drawn in by the attachment of the diaphragm. The deformities of the long bones are due to muscular action, tonus and body weight. Severe Harrison's groove was noted fourteen times in the series and deformities of the lower extremities, such as knock-knee and bow-legs occurred thirty-four times. These bones are extremely liable to fracture and infraction, and such injuries may be mistaken for deformities. The rickitic deformities are, as a rule, pathological excesses of the physiological curves. The cranial bones may show various degrees of deformity giving us the large head, flattened in the occiput. The thorax, too, is often severely affected and, aside from the Harrison' groove, we may have chicken-breast, flared ribs or funnel breast. The lower extremities show the deformity to the greatest degree. The pelvis as well as the long bones may be the seat of the severest lesions. The obstetrician will bear me out when I call attention to the seriousness of neglected rickets in girls. In the long bones of the leg, we find such deformities as coxa vara, decurvation of the femur

forward and outward, curving of the tibia to resemble the sabre tibia of lues, genu valgus and genu varus and pes valgus.

The fourth group usually occurs synchronously with the third and makes the above symptoms more prominent. Again, in the cranium, eburnation of the frontal and parietal bones with huge bosses bring out the square or "cross-bun" head more prominently. Various degrees of this condition are noted fifty-four times in our series. The most important and most frequent symptom of this group is the thickening of the costo-chonderal articulation, the well known "rickitic rosary." In the hundred cases under discussion, this symptom was noted eighty-four times, or in nearly all the cases. Autopsy shows that these enlargements are usually even more prominent on the inner surface than on the outer. The other common symptom of this group is the enlargement of the epiphases of the long bones of the upper and lower extremities. It is most prominent and most easily recognized at the wrists and ankles. Epiphyseal enlargement was noted quite as frequently as the "rosary," occurring in eight-two cases. While the deformities may become so severe as to leave the patient almost grotesque, they are usually moderate and only rarely occur in groups of more than three or four. Those parts of the skeleton that grow most rapidly or are subject to the most continuous use are most severely affected.

Without giving the manifestations of the disease in the osseous system further consideration, we will go over the symptoms in other systems. Anaemia is nearly always present, although it may be due to the poor hygienic surroundings in which rickets commonly occurs. In the later stages of the disease, the general lymphatic system is affected and in children with rickitic deformities prominent lymph nodes and enlarged tonsils are common. Furthermore, there is always a definite myopathia manifesting itself in muscular flaccidity, shown clinically in the distended abdomen, umbilical hernia, the hyper-extensibility of the joints, kyphosis, etc. Distended and pendulous abdomen was noted twenty-eight times in our series and umbilical hernia, thirty-two times. Kyphosis was noted thirty-six times. In this general atony of the musculature, the unstriped as well as the striated muscle takes part and, on the part of the intestinal tract, we very often find constipation, noted forty-one times in our series.

In the nervous system, the disease manifests itself by extreme irritability and peevishness. The child cries for no reason and acquires habit spasms, such as the nodding spasm or youngar patients twist the head to and fro on the pillow until they have worn off all the hair. During their sleep they perspire freely and chiefly on the occiput, so that the mother often complains that the pillow is wet with perspiration. This symptom was elicited by questioning in seventy-four of our cases

The course of the disease is usually chronic and self-limi ing. In the milder forms, there may never be anything to call attention to the fact that the child suffered from this disease. The patient was slow in learning to walk and was a very ill natured child, or perhaps, the gait was a little peculiar at first. But the severe cases require orthopedic treatment for the correction of the deformities. Although rickets itself is never a direct cause of death its advanced forms may result in complications that readily produce that dire result. As a consequence of the improper ventilation of the lungs because of the muscular flaccidity and the softness of the thoracic walls, bronchitis and broncho-pneumonia are common sequellae. Numerous authors consider spasmophilia and such of its manifestations as laryngospasm, a complication of rickets, but the two diseases are so nearly alike in the chemical etiology that the relationship is probably closer. The disturbances of nutrition following prolonged constipation need hardly be mentioned.

With a distinct group of symptoms in a given case, the diagnosis of rickets is always rather simple. Border line cases, or cases complicating other conditions, offer greater difficulty. The differentiation from Mongolian Idiocy, Cretinism and infantile scurvey requires careful study in the milder cases of the latter diseases, and rickets may occur in patients with these conditions. The kyphosis of rickets is readily distinguished from the same deformity in Pott's disease, on account of the fact that the latter is fixed. From osteomalacia, rickets is differentiated only by

the time of occurrence. Syphilitic deformities of the long bones may be recognized by the Reontgenogram.

The question of prophylaxis is rather clouded. Twenty-eight cases in the series were breast fed for six months, or more. The rest received a large variety of artificial foods, among which some of the most highly advertised full substitutes for breast milk predominate. Not having a social service, we can give no figures on the social status and home surroundings of our patients. Sixty-four come from average American stock and probably from the average American home.

In the treatment of this disease, three important factors are noted. First, diet. The rational child's diet must be insisted upon. In the nursling, a whole milk mixture and in the older child, a well varied diet of fruits, cereal, vegetables and reduced amounts of protein.

Second; Sunlight and fresh air. The patient should spend as much time as possible out-of-doors and, if possible, in the sunlight. The acute, florid disease is much more frequently seen in the early spring than after the child has had a summer out-of-doors.

Third; The famous Kassowitz prescription phosphorus and cod liver oil. It seems fairly well established that the beneficial effect of this preparation lies in the oil, but most pediatrists seem satisfied to use the prescription as first given by Kassowitz. This must be continued for at least three months, and better results are obtained by longer perseverance.

LITERATURE

Schabad—Arch. f. Kinderh, 1910.
Gassmann—Hoppe-Seylers Ztschr LIV, 83.
Stoeltzner—Pathology and Therapy of Rickets, Berlin, 1904.
Findlay—The Blood in Rickets, Lancet, London, 1909, 1, 1164.

DISCUSSION

DR. J. T. CHRISTISON, St. Paul: (Discussing the paper of Dr. Scherer):

Mr. Chairman, Ladies and Gentlemen: Rickets seems to be a perennial subject, and I believe that Dr. Scherer is to be thanked for again calling our attention to it.

I do not believe there is a day but what the average pediatrician has sent to him by some of his brother practitioners, a child suffering with ill defined symptoms, irritability, sweating about the head, peevishness, sleeplessness, rolling its head from side to side, one or all or a combination of these symptoms; and he sends it to the pediatrician for diagnosis.

It is my personal experience that I am speaking from just now; and I do not believe that you ought to do it. It is not a difficult matter if you will take the time to have the baby thoroughly undressed, absolutely stripped, and carefully examine it. By making this statement I do not mean to say that any of you are careless, but my own experience as a consultant has led me to the belief that when the average general practitioner goes to see a baby he pulls up its clothes and looks at it for a minute; he may or may not take its temperature; he writes a prescription and says, "Try that!"

I cannot by any possible stretch of my imagination think that is fair to the baby. I have seen that time and time again. And he has not the time to wait 20 minutes or half an hour while I make the examination which I deem necessary. I cannot examine a baby in ten minutes, and I do not think any other man can, or woman either, for that matter, and do it properly.

We are sometimes asked this question: Why is it that rickets appear in a more severe form in the Italian population. There are several reasons for that. If any of you have ever had anything to do with a really truly son of sunny Italy you will remember that he is apt to be wrapped up for all the world like an Egyptian mummy. The mother has a piece of muslin 6 or 8 inches wide and about as many feet in length, and after the child has its ordinary clothing placed upon it, this strip is put up on the front of the neck, carried down to the feet, and up the back, and then rolled around the body. You ask one of these mothers why does she do this, and she will tell you that it is because she wants her child to grow up straight. Now, that is the worst possible thing that she can do. The child does not get any exercise; and if there is one thing that a growinp baby requires, it is room to kick its feet and wave its arms.

I believe another reason why we have rickets so frequently is because the babies are overclothed, and they are subjected to high temperatures. If I may digress for just a moment from the subject of rickets and say a word on the subject of high temperatures. If the heat evaporation is entirely stopped, as it often is in young babies, what is going to happen? The retained heat will soon run their temperature up so high that the physician becomes alarmed. It is not ten days ago that I was asked by one of our St. Paul physicians, to go to a first class hospital to see a child which he declared was suffering with pneumonia, because it had a temperature of 104 3-5. We put the baby out on the examining table and stripped it; the nurse took the temperature while I was there, and sure enough that was correct. A careful examination of the chest of that child revealed absolutely nothing abnormal. The child was left lying upon this table, without a stitch of any kind on, for just 30 minutes, and the temperature was again taken, when it was 101. The nurse's attention was called to this, and she was asked if she would be good enough to pick out this baby (pointing to one of a number that was in a row there, all covered up in the same way); and the result was that particular baby, which was only four days old, had a temperature of 103. The point I am trying to make is this: those babies have a bad

start. That sort of thing takes away from the child a vast amount of its vitality when it needs it the most. And I believe that these are some of the factors that later on enter into the production of rickets.

I do not think that we as medical practitioners are doing our whole duty when we do not insist upon the mothers doing away with the absurd and obsolete stuff that is used to cover up young babies. I say to them every day in my office, when I have the children there and undress them, and when we peel off garment after garment, usually ending with a woolen shirt, when the temperature out of doors is in the nineties, "How would you feel if you had a woolen garment like that next to your skin, and then cover that as you have this baby covered up? You would be fretful and peevish, too, and you would want a doctor."

I believe there are a lot of these little simple things that we are overlooking every day, and our children are not given the treatment that they deserve.

Whether rickets and spasmophilia and all these other allied conditions are one and the same thing or are manifestations of one and the same thing, I believe that if the children had the proper supervision and had proper care, and the proper guidance of a physician during the early period of their lives,—and I will put it a little stronger than that. If we could get the mothers before the children come, as we are doing in some of the cities in this country,—these conditions could be prevented. I would like to say right here that the city that we are now in is one of the pioneers in that particular line of work. The Duluth Baby Welfare Association is one that might very profitably be copied by any city in America. (Applause.) I want to say this, and I will not keep you but just a moment, that the Social Service side of the practice of medicine, insofar as prenatal work among the poorer classes of people is concerned, is going to do more to prevent these nutritional diseases and other preventable diseases than anything else that has happened to medicine in this century.

DR. E. D. BROWN, Minneapolis. (Discussing the paper of Dr. Scherer): In the therapeutics or treatment of rickets, I would like to ask if these men have read the articles reported by Schabad. He did an enormous amount of work, and as I recall it, he proved quite conclusively that calcium is not utilized when it was given as a therapeutic agent, especially in rachitis. He also tried phosphorous, and explains its beneficial action on the ground that it facilitated the utilization of the calcium. He employed combinations of cod liver oil and calcium, phosphorous and calcium, and cod liver oil alone. He found that the best results were obtained when either cod liver oil or calcium were given in combination with phosphorous. I did not know that Kassowitz was the originator of the prescription which bears his name, but I remember now that he pointed out that the mixture of phosphorous and cod liver oil seemed to be the most effective treatment.

DR. F. J. HIRSCHBOECK, Buhl. (Discussing the paper of Dr. Scherer): About a month ago there was an article in the Journal of the American Medical Association; probably Dr. Christison and Dr. Scherer will remember it. I have forgotten by whom it was written, but in this article the treatment with phosphorous in rickets and allied conditions, was considered experimentally, and it was established according to his opinion, and rather conclusively to mine, that the phosphorous was instrumental in permitting the deposition of calcium salts in the epiphyses. The article is rather hazy in my mind, but probably Dr. Christison and Dr. Scherer have read it any may remember it more accurately than I do.

DR. J. D. BUDD, Duluth. (Discussing the paper of Dr. Scherer): I am very much pleased with the remarks of the last gentleman in giving Duluth credit for certain work which we are doing. I have the honor of being the physician for the Infant Welfare work in the city of Duluth, appointed by the Scottish Rite Masonic Fraternity, which has been carrying on this work for the last ten years. I am holding from four to five clinics a week. I have never yet had a baby come in that I did not strip to the skin—and examine carefully. In one case of rickets I saw the rosary. It happened that in taking off the clothes of the child I noticed the rachitic rosary; and upon investigation I found a case of rickets.

I have found a great many cases of rickets this summer. I never thought there was so much rickets in the world. The fact of the case is, there are lots of cases that would have been passed unsuspected if I had not stripped these children and examined them carefully. In the last week I examined 24 babies at one afternoon's clinic.

I had one case of rickets at the hospital, where the abdomen was so enormously distended and enlarged, that I eventually, with Dr. Schroeder, working in conjunction, drew off 37½ ounces of fluid. I have seen many cases of enlarged abdomen, but that was the only abdomen in which I have found ascites, especially to the extent that I found in that case. The baby was seven months old, and only lived a short time, and doctor Schroeder remarked that he had never seen a case of rickets that had such an enormous abdomen as this one had. Evidently there was some other cause besides rickets for the ascites.

I have had a great many cases, as I remarked. Dr. Kerley in his "Treatment of the Diseases of Children," recognizes the value of inunctions. He recommends goose oil or lard without salt, after a salt bath. I have been using that to some extent. I was sorry that the doctor did not mention inunctions, and I hope he will, in closing, state whether or not inunctions of oil are of value or if he prefers this Kassowitz treatment of phosphorous and cod liver oil internally? I was very glad to hear this paper on this subject this afternoon, because it is of very vital interest to me as the physician in charge of the Infant Welfare work in this city, where I am seeing so many cases of rickets.

Of course, these cases of rickets are in a portion of the city devoted to the laboring and poorer class of people, and many of the children have been brought up by bottle feeding, and especially on Borden's Eagle Brand Condensed Milk.

I would like to ask the question, if a child has to be brought up on condensed milk, if it is not better to use Eagle's Evaporated instead of the Condensed milk, which contains much less sugar. Those are two points on which I would like to have information; because I am still treating so many cases that I would like to have all the information possible for the benefit of the poor children of the city.

DR. H. W. HILL. (Discussing the paper of Dr. Scherer): I would like to ask about the relation of the vitamins. I did not hear them mentioned in the paper, and I wondered what the essayist thought about it.

DR. C. A. SCHERER, (Closing the discussion): I am indeed glad that this subject has called forth so free a discussion. The importance of thorough examination has been very completely covered by Dr. Christison.

In our office we concentrated upon the three points in the treatment as already mentioned, i. e., diet, sunlight and fresh air, and the Kassowitz prescription. The difficulty in giving this rather nasty mixture is largely a matter of the state of mind of the mother. If she is determined, the child will take it and soon get to like it. As for the various modifications such as the use of tricalcium phosphate in the U. S. P. emulsion rather facilitate the administration.

The inunctions of the oil mentioned by Dr. Budd have never been used by us. The mixture smells up the house even when put into the baby.

As to the vitamines, I have purposely avoided this question as it seems still rather hazy. It has recently been submitted that the Kassowitz prescription is beneficial because of the large amount of vitamines in the Cod liver oil. There is little doubt that aside from the deficiency of the calcium metabolism the vitamines play a prominent part in the etiology of the disease.

AUTOMATIC SYRINGE

A. N. Bessesen, M. D.
Minneapolis, Minn.

This syringe was devised some years ago for use in local anaesthesia. It is not as satisfactory for that purpose as the improved syringe the construction of which was published in the Journal of the American Medical Association, April 20, 1918, page 1145. However, this syringe is of a simpler design and the features of it can be applied to any ordinary syringe by constructing the part containing the valves into a separate piece, an adapter, so to speak, that can be interposed between the syringe and the needle.

In this original plan ball valves were used, but later experiments proved the pin type or drop valve to be the more satisfactory. Dr. Louis Dunn, of Minneapolis, has modified this syringe by eliminating the valve at the needle outlet. He depends on the tissues acting as a valve to prevent return of the fluid into the syringe. Naturally the instrument could only be operated successfully with the needle so imbeded. Dr. Dunn has used a syringe as above modified for some time and he claims to find it entirely satisfactory. It may be a question if this change is really desirable, certainly a syringe so constructed would require constant care in its operation to prevent the injection of air into the tissues.

The automatic syringe here illustrated will prove more satisfactory for washing out cavities; where a more or less constant flow is desired of a large quantity of solution, especially if it is necessary to inject the stream with some degree of force. And a small stream would require pressure to be at all satisfactory.

In irrigating the ear, urethra or cavities, or when used in connection with the cystoscope to distend the bladder it is not necessary to have the special containers illustrated; a rubber tubing leading to the syringe can be simply immersed in a basin or other vessel containing the solution, and the parts irrigated for as long a time as may be desired by the simple operation of the syringe.

Fig-1

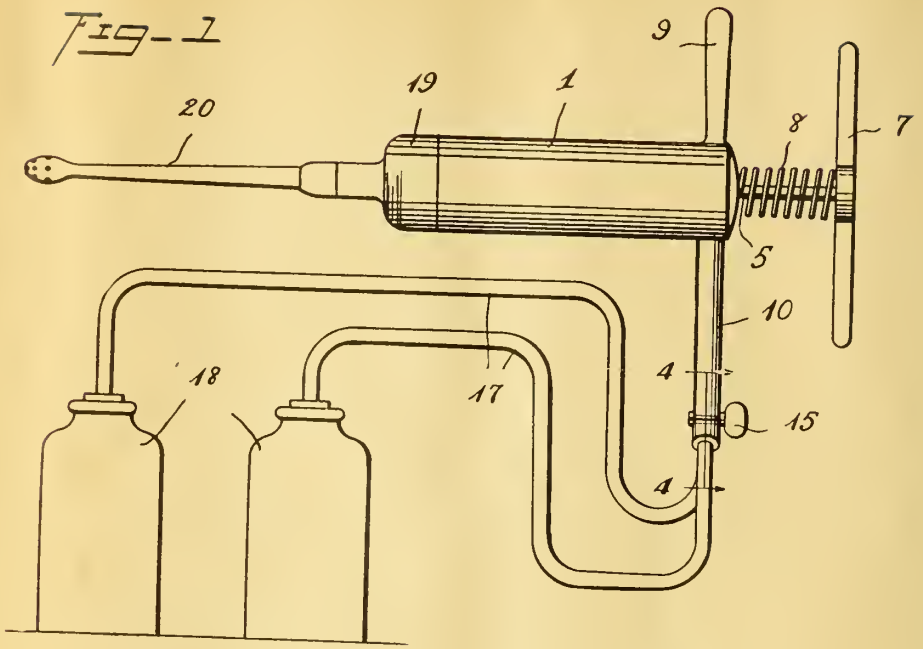


Fig-2

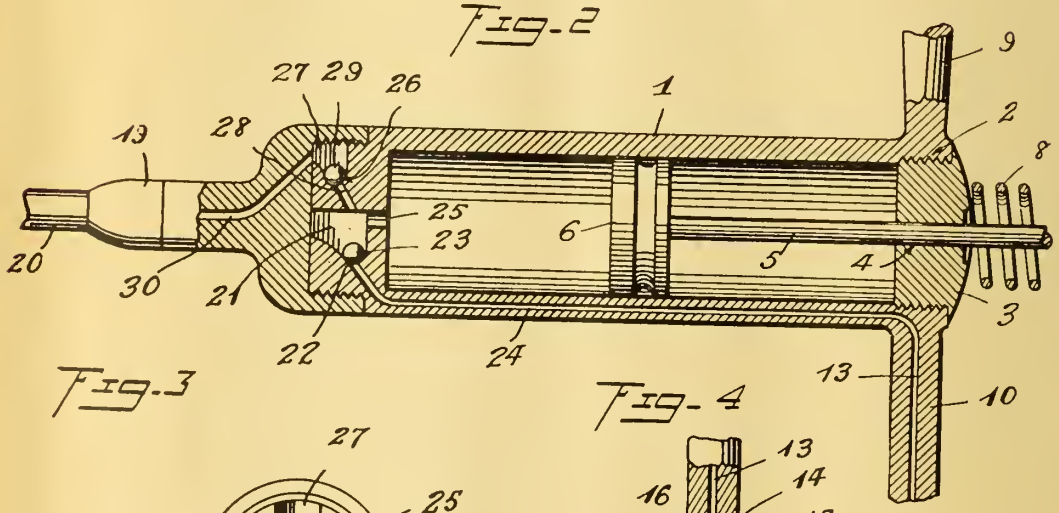
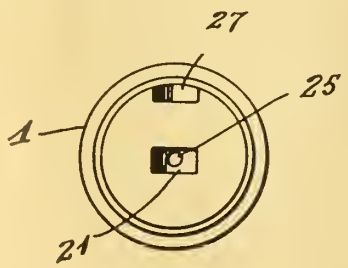


Fig-3



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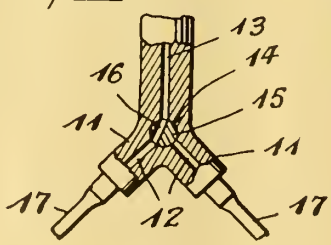

Inventor

Alfred N. Bessesen.

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EDITORIAL

THE MODERN PHYSICIAN'S ACTIVITIES

It is quite possible that one of the results of the war has been a broadening of the field of activities for the medical man.

In the recent emergency the profession was called upon to carry on a vital part of the war program. When we stop to consider what the nation would have done without the service of the thirty-five thousand physicians in active service and the thousands more not in uniform on the various examining boards we may be excused as a profession for some pride at the way we showed our patriotism.

Upon the medical profession depended the choice of recruits, the prevention of disease, the care of the diseased and wounded and the apportionment of just disability remuneration.

The morale of the private at the front depended as much on the near presence of the doctor as on any other single factor.

In short the profession was an absolute necessity in the execution and winning of the war.

It is to our everlasting credit that it was not necessary to have our services drafted.

It has always been considered that the physician owes a peculiar duty to the state in peace as well as in war. He has an education much better and broader than that of most other professions which entitles him to be looked to for his opinion and aid in situations which are often vital. His opinion, so important to the army, is coming to be more correctly appreciated when applied to civic questions. This means an increase in the demand for medical men of the bigger type, with a horizon extending much beyond his own narrow professional specialization. It means the opportunity for increased service to his fellow men oftentimes the greater because so likely to be unappreciated.

Are we going to allow jealousies or the fear of breaking some minor professional convention hold us back when an opportunity presents itself to do some real service to our community?

The physician too who does commendable work in his public activities naturally does well in his private work. This is as it should be and this fact should not deter him from such a field.

We have doctor-mayors, doctor-aldermen, doctor-governors, doctor-congressmen, and doctor-senators. Who knows but what the next president may be a doctor-president?

AMERICAN WOMEN'S HOSPITALS

The war is over. And yet there is still an enormous demand from various localities for help in combating the after results of the war. A most urgent plea comes from Servia to assist in fighting the devastation caused by diseases in epidemic form. The American Women's Hospitals are now operating four in France and one at Monaster, Serbia. Mobile hospitals will be sent to Servia as soon as sufficient funds can be raised. Send as large a donation as you can to Dr. Auten Pine, State Chairman, American Women's Hospitals, 749 Lowry Bldg., St. Paul, Minn.

SOME VITAL STATISTICS

The recent report of the Census Bureau at Washington gives some interesting statistical facts. The birth registration area in 1917 comprised fifty-three per cent of the country's population. If the birth and death rates

remain the same as they were in 1915-16 and 17 and no migration of population occurs, the population will increase at the rate of about one per cent each year or somewhat more than ten per cent in ten years which is about half the rate of increase—twenty-one per cent—of the entire population of the country between 1900 and 1910.

While the birth rates of white and colored population was slightly greater in the latter, the death rate was almost twice as great in the colored element.

The infant mortality showed in 1917 one death in every eleven, an improvement over the preceeding two years when it was one in every ten. It is interesting to note that Minnesota with an infant mortality rate of 67.4 per 1,000 was the lowest and Maryland with 119.9, the highest. When a comparison of rates is made on the basis of nationality of mothers it is again interesting to find that those born in Denmark, Norway and Sweden show the lowest rate, 66.2. As the infant mortality composes a large per cent of the entire mortality, the large Scandinavian population in Minnesota apparently is one factor which accounts for the low mortality rate in our state.

ADEQUATE MEDICAL SERVICE

In these days of progress in preventive medicine there is some tendency to separate too sharply preventive from curative medicine. It should not be forgotten that an adequate medical service to the whole people will do more to prevent disease and disability than any other single measure to be considered. At present the people in the United States are paying out money sufficient for the maintenance of an adequate medical service, but fail to receive it. This money, however, is spent in such a haphazard manner that the service is not only often inadequate or worthless, but at times actually harmful. For one item—drugs—the United States spends $500,000,000 a year. This sum alone, if properly expended, would buy all the necessary drugs and add $2,000 a year to the income of each of the 125,000 physicians in active practice in the United States.—B. S. Warren, M.D., Public Health Reports.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNESOTA STATE HOSPITAL ASSOCIATION

The second annual convention of the Minnesota Hospital Association opened Wednesday morning, June 4, at the Hotel Radisson, Minneapolis, with an attendance of more than 100 hospital superintendent's and physicians from all parts of the state.

Registration of the delegates occupied the first hour from 9 until 10 A. M., after which the invocation was given by Rev. Henry Hartig, superintendent of St. Andrew's Hospital.

Mayor J. E. Myers of Minneapolis in a short address welcomed the delegates to the city. "We are proud," he said, "to have such a representative group of the state's physicians and surgeons gathered together in our city for the purpose of exchanging ideas in regard to more efficient hospital service."

An address by the president, Ernest E. Mariette, M. D., superintendent of Glen Lake Sanatorium, Hopkins, followed.

Co-operation of surgeons in charge of the base hospital at Fort Snelling was praised by Captain W. S. Miller in a talk on "Educational Service in United States Army Hospitals."

"The hospital at Snelling is easily one of the best in the country," said Captain Miller, who is an officer in the Sanitary Corps, U. S. A., at the Fort. "There is such a splendid co-operation of the officers in charge. It is indeed beyond the average.

"The standard of morale among the patients, who are mostly overseas men, was exceedingly low when I first came to the Snelling post," Captain Miller continued. "Military offenses were being committed with no respect for the law whatever. However, after securing close co-operation of the surgeons with the various departments matters have been so changed that the morale of the men cannot now be surpassed."

Rehabilitation was discussed by Harry W. Jones, Divisional Director of Rehabilitation Work in the United States Army. Miss Beatrice Lindberg, Industrial Worker for the Advisory Commission, gave a talk on "Industrial Work in Tuberculosis Sanatoria and its Relation to the Convalescent in the General Hospital."

Dr. S. Marx White of the University Hospital, Minneapolis, who recently returned from overseas where he served as a major with the University of Minnesota Base Hospital, No. 26, and G. W. Olson, superintendent of the Swedish Hospital, Minneapolis, discussed "The Relation Between the Staff and the Hospital."

The necessity of hospital medical records was explained by Dr. Horatio B. Sweetser of the staff of St. Mary's Hospital, Minneapolis, and Dr. L. D. Baldwin, superintendent of the University hospital. Dr. F. S. Bissell of the University Hospital told of "The X-ray in the private hospital."

"The Properly Organized Clinical Laboratory for the Private Hospital," was discussed by Dr. C. R. Drake, Pathologist, Swedish Hospital. Minneapolis.

Dr. John G. Bowman spoke on the standardization of hospitals and Rev. C. B. Moulinier, S. J., President of the Catholic Hospital Association and connected with the Marquette School of Medicine, Milwaukee, Wis., led a general discussion on hospital workings and hospital efficiency.

Opening at 8 o'clock with a talk by Dr. Johnson, president of Dawson Hospital, Dawson, Minn., on, "The Responsibility of the Hospital in the Smaller City to the Community," the evening session was given over for the most part to a Round Table Conference. This conference was conducted by J. E. Haugen of the St. Paul Hospital, St. Paul, Minn.

Four big questions relating to all hospitals in general were up for discussion. They were: (1) How can the superintendent safeguard the hospital against admitting patients who do not make the necessary financial arrangements in advance? (2) The management of dining-room service and who are to be served in the room? (3) Open hospital or staff? (4) What is the best system of keeping a record of condemned goods? (5) How can the need for nurses and student nurses be met?

The second and concluding day of the conference began with a talk at 9 A. M. by Miss Marian Tibbetts of the Social Service department, University Hospital, on "The Social Service Work in the General Hospital."

"One of the most important needs of hospitals today are proper dental, clinical staffs," said Dr. E. S. Kremer of the University hospital staff, in addressing the conference. "Up to the present and probably at the present time the mouth of a patient has not had sufficient medical attention. But it has now been found that the majority of hospital cases are also dental cases —the care of the mouth and the importance of the care of the mouth should be emphasized in every hospital."

A. L. Roberts of Rochester, Minn., told the delegates that he thought hospitals ought to be managed on a hotel basis. An address on the engineering problems of the present day hospitals was given by Dean John R. Allen of the College of Engineering, University of Minnesota. "Hospital Finance—The Responsibility of the Community Toward the Hospital" was the subject of a general discussion.

Thursday's afternoon session was opened by G. W. Olson, superintendent of the Swedish hospital, Minneapolis, who reported on the legislation secured at the last session of the legislature.

Miss Carrie Epply, R. N., superintendent of nurses at the Minneapolis City Hospital, told of educating young women in the hospitals to make them efficient nurses and to fit them for hospital and home nursing positions. General discussions on questions relating to nurses and nursing were led by Miss Margaert A. Cowl, R. N., president of the State Board of Examiners of Nurses, and Miss Marian L. Vannier, R. N., acting superintendent of nurses of the University Hospital.

Enforcing an eight-hour law for women employes in the hospitals was urged by Miss Eliza Evans, secretary of the Minimum Wage Commission, as the means of preserving the vitality of the workers and making for more efficient service during work hours.

The final session of the convention was held Thursday evening at 7:30 o'clock. L. F. Foley, Inspector of the Board of Control, State Capitol, St. Paul, Minn., told of the physical aspect of the hospital from the point of the State Hospital Inspector.

The two-day convention closed with election of officers: Col. L. B. Baldwin, superintendent of the University Hospital, was elected president of the association for the coming year. Dr. P. M. Hall, superintendent of the Walker Sanatorium, was named first vice-president; Mrs. Sarah G. Knight, superintendent of Asbury Hospital, second vice-president; Miss Naomi Johnson, superintendent of the Red Wing Hospital, third vice-president, and J. E. Haugen, superintendent of St. Paul Hospital, secretary-treasurer.

Members of the executive committee chosen include: Dr. A. B. Ancker of the St. Paul City and County Hospital; Miss Bertha Matlick, superintendent of Hillcrest Hospital, and Dr. A. T. Laird, superintendent of Nopeming Sanatorium, Nopeming, Minn.

Governor J. A. A. Burnquist of Minnesota; Dr. E. P. Lyon, dean of the College of Medicine, University of Minnesota, and members of the State Board of Control, were elected honorary members of the association.

The retiring officers with the exception of the second vice-president who was re-elected included: president, Dr. E. S. Mariette, superintendent of Glen Lake Sanatorium, Hopkins, Minn.; first vice-president, E. F. Paulson, manager of Norwegian-Lutheran Deaconess Hospital, Minneapolis; second vice-president, Mrs. Sarah H. Knight, superintendent of Ashbury Hospital, Minneapolis, and secretary-treasurer, Miss Lydia H. Keller, R. N., Minnesota State Board of Examiners of Nurses.

The executive committee included the president, ex-officio; the secretary, ex-officio; Miss A. Jeanette Christansen, R. N., superintendent of Northwestern Hospital, Minneapolis; Dr. A. T. Laird; Miss Louise M. Powell, superintendent of nurses University Hospital and G. W. Olson, superintendent of the Swedish Hospital, Minneapolis.

MINNESOTA ACADEMY OF MEDICINE

The regular monthly meeting of the Academy for May was held in these rooms on the 21st instead of on the 14th. Postponment from the second to the third Wednesday was necessary to accomodate our visiting essayest. Ninety members and visitors sat down to table, the largest number ever to attend a meeting of the Academy. The serving of dinner was slightly delayed beyond the usual hour.

Following the banquet, tables were removed, a motion picture apparatus adjusted, and the meeting called to order.

Dr. Christison presided.

Because of the delay in getting started, the minutes of the preceding meeting was dispensed with.

The committee appointed several months ago, to report on the death of Dr. Williams, submitted a short sketch of his life, it was accepted and ordered spread on the minutes. The following is a copy of the report:

DR. CORNELIUS WILLIAMS

Born in Kentucky in 1848 Dr. Williams received a common school education, and took his degree in medicine from the New York College of Physicians and Surgeons in 1874. After post graduate and hospital work he began the practice of medicine in New York City, and worked as student and assistant in Knapp's Ophthalmic Institute his practice to diseases of the eye and ear, and soon became recognized as an expert in those branches of medicine. Well trained for the work at the start, he developed ability as a diagnostician judgment as a surgeon, and skill as an operator. His early operations upon the mastoid were notable for their thoroughness at a time when much of that work was done superficially. He used altogether the dental engine and burrs in cleaning out the cells, and always maintained the superiority of those tools over the mallet and chisel. Besides this Academy he was a member of the American Medical and State Medical Associations and of the Chicago Ophthalmological and Otological Society. He was president of the Ramsey County Medical Society in 1901, and of the State Medical Association in 1908. He died Dec. 29, 1918 at the age of seventy years.

Wm. Davis,
J. L. Rothrock,
J. W. Chamberlin.

The committee appointed in March to consider names for nomination from the state at large, presented a list of ten; also a supplemental list of five. The report was referred to the Executive Committee.

Dr. Abbott reported a case of postrectal tumor (calcified fibroma) in a woman fifty-nine years of age. She had never been pregnant. There was no relevant family history. Four years ago she began to have bearing-down and pushing pains about the rectum when on her feet or riding, and distinctly worse upon moving the bowels or in passing her water. There was some extension of pain to the thighs, but no backache. Slight relief on lying down. Conditions grew so bad that she declared another month would see her insane if something was not done to give relief. Physical examination showed all organs to be normal except a partial fixation of the uters. Through the vagina a hard nodular mass could be felt behind the cervix, slightly movable, and very tender. In size it was about as large as a duck's egg. The rectum was movable over the tumor when palpated within that cavity. Beginning at the outer edge of the anus an incision was made as high up as the tip of the coccyx, having in mind the possible necessity of doing a modified Kraska. This incision was extended through the raphe of the levator ani muscle and the rectal wall dissected free with the finger. A capsule could be made out, which was opened with scissors and the tumor coaxed forward until it could be grasped with forceps. Enucleation through the opening made in the levator ani muscle was easy. There was no hemorrhage; the rectal wall was uninjured. In gross appearance the tumor is that of a calcified fibromyoma. Microscopically it is made up of fine fibrils, wavy, and with small nuclei. Non-staining areas indicate the position of minute calcification. The arrangement of the fibrils lead to the belief that the tumor originally was a myoma. Such tumors are seldom seen, those springing from the surface of the bone being much rarer than those originating in the rectal wall. Text-books in general refer to them only as being possible. Tuttle reports three; Berg, Senn, and Westermark report one each. Harrison Cripps mentions a similar case to Dr. Abbott's and McCoch on 1893, reported one identically like it. In dealing with it McCoch made a preliminary colostomy, and then did a modified Kraske, removing with the tumor a part of the gut wall as well. If another case falls into his hands Dr. Abbott says he will close the incision completely and not pack with gauze, as he did in this instance, feeling sure that recovery would be more rapid and less uncomfortable.

Dr. Staples reported the history and exhibited a patient suffering from polycythemia—meaning, literally, many-celled blood. A male 26 years old within the last year had developed muscular weakness, inability to work, headache and general lassitude. The various nervous symptoms which frequently accompany this malady have not yet appeared. His blood examination shows red cells 8,000,000 to 10,000,000; leucocytes 8,000 to 9,000; hemaglobin 135 to 150. Countenance presents a marked cyanosis; skin purplish red; veins distended and dark red. Clubbed fingers especially marked and characteristic. Spleen slightly enlarged. Treatment, unsatisfactory. Bleeding was beneficial in one of his cases.

Dr. Farr gave a demonstration by means of motion pictures that illustrated his method of using novocain. A number of operations were shown performed under its influence.

The paper of the evening was presented by Dr. W. J. Mayo on Splenic Anemia. Drs. Cross, Roberts, MacLaren and Robertson participated in the discussion which followed, Dr. Mayo closing.

F. E. Leavitt, Secretary.

SIOUX VALLEY MEDICAL ASSOCIATION

The Summer Meeting of the Sioux Valley Medical Association will be held at Sioux Falls, Wednesday and Thursday, July 16th and 17th.

Owing to the recent untimely death of the Secretary, Dr. Browning, it is impossible to give the details of the program at this time, but the programs will be issued in ample time.

The forenoon of the first day will be occupied with clinics. The scientific and business session will follow in the afternoon and morning of the second day.

Headquarters and sessions will be held at the Cataract Hotel, where the banquet will be served the evening of the first day.

A number of excellent papers will be read by men from the four adjoining states of Minnesota, Iowa, Nebraska and South Dakota and a large attendance is anticipated. A most cordial invitation is extended to the profession generally.

J. G. Parsons, M. D., President.

OBITUARY

DR. ANDREW JOHNSON

Dr. Andrew Johnson died at St. Luke's Hospital, Duluth, June 3d. Dr. Johnson was born at Bergen, Norway, and located at Cloquet twenty-eight years ago. His wife and two children survive him.

DR. A. M. ADSIT

Dr A. M. Adsit of Hastings died June 18th at the St. Joseph's Hospital following an operation for gall stones.

OF GENERAL INTEREST

Dr. F. A. Allen, of Crosby, has moved to Ironton.

Dr. T. E. Flynn has resumed his practice at Morgan.

Dr. Geo. D. Rice has resumed his practice in St. Cloud.

Dr. Spurbeck of Cloquet will locate at Webster, S. D.

Dr. R. S. Forbse, West Duluth, has returned from the service.

Dr. G. R. Pease of Redwood Falls has retired from practice.

Dr. R. L. Spinks of Middle River has been promoted to a captain.

Dr. J. T. Schlesselman of Mankato has gone East to take post graduate work.

Dr. Wm. J. Ecklund has returned from overseas and is now located in Duluth.

Dr. A. F. Hunte has received his honorable discharge and has returned to Madelia.

Dr. W. M. Chowning has resumed his practice at 716 La Salle Bldg., Minneapolis.

Dr. G. E. McCann has received his honorable discharge and has returned to Nevis.

Lieut. Col. B. W. Kelly received his honorable discharge and returned to Aitkin.

Dr. C. D. Richmond has received his honorable discharge and has returned to Jeffers.

Dr. W. B. Wright, Jr., of Chicago, will have charge of the Rood Hospital at Chisholm.

Capt. E. H. Marcum has returned from France and has resumed his practice at Bemidji.

Dr. F. A. Engstrom has received his honorable discharge and will locate in Wanamingo.

Dr. Ward C. Zeller of Union City, Indiana, will be associated with Di. Allen at Ironton.

Dr. J. D. Watson has received his honorable discharge and has returned to Holdingsford.

Dr. W. J. Stock of Waconia has returned from overseas and has resumed his practice.

Dr. C. H. Ghent has received his honorable discharge and will locate at Third and Maria, St. Paul.

Dr. A. L. Gleason, City and County Hospital, St. Paul, will locate in Great Falls, Montana.

Dr. Fred B. Coleman who has been in the service of the United States Army has returned to Austin.

Dr. F. H. Gambell of Thief River Falls has sailed for Siberia where he will engage in Red Cross work.

Dr. C. R. Stanley of Ely has moved to Fulda and has entered partnership with Dr. F. W. Metcalf.

Dr. E. R. Sather has returned to Spring Valley after having served with the Medical Corps overseas.

Dr. J. C. Michael, St. Paul, in now at Camp Hospital 4 in a suburb of Paris. Dr. Michael is now a Captain.

Dr. George F. Eusterman of Rochester was married in June to Miss Ethel Huntimer of Glen Rapids, S. D.

Dr. C. E. Henry returned to Minneapolis after having served fourteen months on the hospital ship Solace.

Dr. Franklin Raiter, who has served in the Medical Corps of the United States Army has returned to Cloquet.

Dr. C. A. Fjelstad, Austin, will go to New York to take special work, after which he will locate in Minneapolis.

Dr. W. W. Lewis has received his honorable discharge and has resumed his practice in the Lowry Bldg., St. Paul.

Lt. Col. J. S. White has returned from service abroad and is opening his office at 1144 Lowry Building, St. Paul.

Dr. F. E. Burch, who has been the commanding officer of the Base Hospital at Camp Dodge, has returned to St. Paul.

Dr. John T. Litchfield has returned to Minneapolis after having served for a year on the United State hospital ship Solace.

Dr. F. M. Manson has returned to Worthington after having served for nearly two years in the Medical Corps of the United States Army.

Dr. W. W. Klima, who has had charge of the practice of Dr. T. J. Trutna, Glencoe, while the latter was in the service will locate at Stewart.

Dr. E. M. Hammes has resumed his practice in the Lowry Bldg., St. Paul, after having served in the Medical Corps of the United States Army.

Dr. Richard Cranmer, who has recently returned from eighteen months service in the A. E. F., resumed practice in the Syndicate Bldg., Minneapolis.

Major Paul F. Brown has returned to Minneapolis after ten months service at the front in France and Belgium. He will resume his practice at 1101 Met. Bank Bldg.

Dr. Wm. W. Moir has returned from service with the United States Army in Siberia and reopened his offices at the corner of Nicollet Avenue and Lake Street, Minneapolis.

Dr. R. E. Swanson, who recently returned from France after one year and eight months of medical service in the United States Army, has become associated with Dr. Haskell of Alexandria.

Dr. Walter J. Marcley of Minneapolis has returned after serving for sixteen months overseas for the Red Cross in France and Switzerland where he was engaged in the care of tubercular patients.

The following men have been elected to Alpha Omega Alpha, honorary medical scholarship fraternity, from the senior medical class: Wendell Lanphear Downing, Swan Ericson, Manley Hewitt Haynes, Siegfried Frederick Herrman, Hugh Toland Jones, Thomas James Kinsella, Russell Wright Morse, Martin Daniel Ott, Faus Peter Silvernale, Edgar H. Norris, Wm. Ray Shannon.

The following physicians have been elected to honorary membership during the past year: Drs. Chas. Lyman Greene, J. C. Litzenberg and J. P. Sedgwick.

NEW AND NON-OFFICIAL REMEDIES

During May the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Non-Official Remedies:

Abbott Laboratories:
- **Liquor Hypophysis, U.S.P. Abbott.**
- **Procaine Hypodermic Tablets $\frac{3}{4}$ grain.**
- **Procaine-Adrenalin Hypodermic Tablets—Abbott.**

Gilliland Laboratories:
- **Antimeningococcic Serum (Combined Type) (Gilliland).**
- **Diphtheria Antitoxin, Concentrated and Refined.**
- **Tetanus Antitoxin, Concentrated and Refined.**
- **Antipneumococcus Serum Type I.**
- **Small Pox Vaccine.**
- **Original Tuberculin "O.T."**

E. R. Squibb and Sons:
- **Protargentum—Squibb.**

NEW AND NON-OFFICIAL REMEDIES

Atreol.—An aqueous solution containing as its principal constituent the ammonium salts of a mixture of organic acids containing nitrogen in the sulphonic radical which results from the action of sulphuric acid on certain petroleum distillates. Atreol is applied locally for promoting the absorption of swellings and effusions in contusions following fractures, etc. It is claimed to be useful in dermatologic and gynecologic practice. It may be used in aqueous solutions, ointments and suppositories. The Atlantic Refining Co., Philadelphia, Pa. (Jour. A. M. A., May 17, 1919, p. 1463).

Gilliland's Concentrated and Refined Diphtheria Antitoxin.—Marketed in ampules containing 1,000, 5,000 and 10,000 units each. For a description of Diphtheria Antitoxin, Concentrated, see New and Non-Official Remedies, 1919, p. 280. Gilliland Laboratories, Ambler, Pa.

Gilliland's Concentrated and Refined Tetanus Antitoxin.—Marketed in ampules containing 1,500, 3,000 and 5,000 units each. For a description of Tetanus Antitoxin, Concentrated, see New and Non-Official Remedies, 1919, p. 266. Gilliland Laboratories, Ambler, Pa.

Gilliland's Antipneumococcus Serum, Type I.—Marketed in vials containing 100 cc.; also in double ended vials containing 50 cc. each, with a gravity injection apparatus for intravenous injection. For a description of Antipneumococcus Serum, see New and Non-Official Remedies, 1919, p. 271. Gilliland Laboratories, Ambler, Pa.

Gilliland's Small-Pox Vaccine.—Marketed in sealed capillary tubes in packages containing two tubes each. For a description of Vaccine Virus, see New and Non-Official Remedies, 1919, p. 274. Gilliland Laboratories, Ambler, Pa.

Gilliland's Original Tuberculin, "O.T."—Marketed in 3 Cc. vials. For a description of Old Tuberculin, see New and Non-Official Remedies, 1919, p. 2771. Gilliland Laboratories, Ambler, Pa. (Jour. A. M. A., May 17, 1919, p. 1463).

Barbital-Abbott Tablets 5-Grains.—Each tablet contains 5-grains of barbital-Abbott (see New and Non-Official Remedies, 1919, p. 82). The Abbott Laboratories, Chicago.

Procaine Hypodermic Tablets, ¾-Grain.—Each tablet contains ¾-grain of procaine-Abbott (see New and Non-Official Remedies, 1919, p. 30). The Abbott Laboratories, Chicago.

Procaine-Adrenalin Hypodermic Tablets.—Each tablet contains procaine-Abbott ⅓-grain and adrenalin 1-250-grain (see New and Non-Official Remedies, 1919, p. 30). The Abbott Laboratories, Chicago (Jour. A. M. A., May 17, 1919, p. 1463).

Protargentum-Squibb.—A compound of gelatin and silver containing approximately 8 per cent of silver in organic combination. It has the actions and uses of silver preparations of the protargol type (sce New and Non-Official Remedies, 1919, p. 307). Protargentum-Squibb is used in 0.25 to 5 per cent. aqueous solutions, prepared freshly as required. E. R. Squibb and Sons, New York (Jour. A. M. A., May 24, 1919, p. 1543).

Antimeningococcic Serum (Combined) (Gilliland).—Marketed in 15 Cc. and 30 Cc. ampules and in 15Cc. and 30 Cc. cylinders with attachments for spinal administration. For a description of Antimeningococcus Serum, see New and Non-Official Remedies ,1919, p. 270. Gilliland Laboratories, Ambler, Pa. (Jour. A. M. A., May 24, 1919, p. 1615).

PROPAGANDA FOR REFORM

Phosphorus Metabolism.—The more recent investigations on digestion and absorption all point to the probability that phosphorus from the digestive tract reaches the general circulation only in the form of inorganic phosphates and that all organic phosphorus compounds are synthesized in the body cells. This is in support of the conclusion of the Council on Pharmacy and Chemistry in forming an estimate of the therapeutic potency ascribed to preparations of organically bound phosphorus, such as lecithin, glycerophosphates, phytin, nucleic acid and phosphoproteins. All the newer researches give no indication that the body is dependent on a ready made supply of phosphatid (phosphorized fat) in the diet to maintain normal nutrition (Jour. A. M. A., May 3, 1919, p. 1294).

Iodex.—Iodex is a black ointment marketed by Menley and James with the claim that it is a preparation of free or elementary iodin minus the objectionable features that go with free iodin. As a result of an investigation of Iodex made in the A. M. A. Chemical Laboratory, the Council on Pharmacy and Chemistry reported in 1915: 1, The composition is incorrectly stated; the actual iodin content is only about half of that claimed. 2, The action of Iodex is not essentially that of free iodin, although that is the impression made by the advertising. 3, The assertion that iodin may be found in the urine shortly after Iodex has been rubbed on the skin has been experimentally disproved. As the manufacture of Iodex still persist in their claim that the product contains free iodin, the A. M. A. Chemical Laboratory has again examined Iodex. It reports that Iodex gives no test for free iodin, or, at most, but mere traces (Jour. A. M. A., May 3, 1919, p. 1315).

Two Misbranded Nostrums.—Bull's Herbs and Iron Compound was a weak alcoholic solution containing iron, phosphates, sugar and vegetable derivatives, among which were quinin, red pepper, gentian and podophyllum. It was falsely and fraudulently represented as a remedy for weak nerves, ailments peculiar to women, scrofula, rickets, liver, kidney and bladder diseases, etc. Effervescente Granulare consisted of over 13 per cent. sodium bicarbonate, 61 per cent. of sugar, 3 per cent. of borax, and 17 per cent. potassium bitartrate. Though invoiced as "Eff. Magnesia" it contained no magnesia. Both were declared misbranded (Jour. A. M. A., May 3, 1919, p. 1316).

Collosol Manganese.—Stephens, Yorke, Blacklock, Macfie, Cooper and Carter report in the Annals of Tropical Medicine and Parasitology the results of their investigation for the English government of Collosol Manganese conclude that Collosol Manganese in the doses used is of no value in the treatment of simple tertian malaria (Jour. A. M. A., May 3, 1919, p. 1318).

Helpful Hints for Busy Doctors.—A comparatively recent issue of the International Journal of Surgery has an editorial on "The Questionable Etiology of the Present Epidemic," signed "G. H. Sherman, M. D." It was to the effect that one can best immunize against influenza by using "a combined vaccine containing the influenza bacillus, pneumococci, streptococci, the Micrococcus catarrhalis and staphylococci." In the advertising pages of the same issue was an advertisement of "Influenza Vaccine No. 38," which "Will abort Colds, Grippe, Influenza and Pneumonia," and which was made by "G. H. Sherman, M. D." The vaccine contained the various bacilli and cocci mentioned in the G. H. Sherman editorial. One wonders if in succeeding issues of the International Journal of Surgery one may look for editorials by the proprietors of Bellans, Phenalgin and other products advertised in the publication (Jour. A. M. A., May 10, 1919, p. 1371).

Administration of Arsphenamine.—The U. S. Public Health Service has issued a circular concerning the dilution and the rate of administration of arsphenamine solutions. A study as to the cause of the disagreeable results following the use of the various preparations of arsphenamine has indicated that most disagreeable results are not inherent in the preparations but are produced through faulty steps in the administration of the remedy, chiefly from the use of a too concentrated solution and by too rapid administration (Jour. A. M. A., May 10, 1919, p. 1372).

Lane's Asthma Cure.—The A. M. A. Chemical Laboratory reports that Lane's Treatment, double strength, for Hayfever and Asthma (formerly called Lane's Asthma Cure) was found to be essentially a solution of calcium iodid, alcohol and water, with vegetable extractives and sugar. It contained 3.96 Gm. of

anhydrous calcium iodid, or about 2.5 grains per dose. Iodids have been used for years in the treatment of certain forms of asthma. Under careful supervision the use of iodids in selected cases of asthma may give decidedly satisfactory results. Self dosing with iodids, however, is by no means free from danger (Jour. A. M. A., May 10, 1919, p. 1386).

Tyree's Antiseptic Powder.—An advertising leaflet for Tyree's Antiseptic Powder recently received by a physician is devoted largely to a report of a bacteriologic examination of the Tyree's preparation. The physicians who receive this advertising material might easily overlook the fact that the reported bacteriologic tests were made in 1889 and that the investigation of the Council on Pharmacy and Chemistry in 1906 brought out that the examination applied to a product differing radically in composition from that of the preparation now marketed. The Council found that although the Tyree preparation was advertised as a mixture of borax and alum, it was essentially a mixture of zinc sulphate and boric acid. Here then we have a manufacturer publishing in 1919, in behalf of a certain product, tests that were made in 1889 with a product of different composition although of the same name (Jour. A. M. A., May 17, 1919, p. 1482).

Peptenzyme.—Peptenzyme was reported on by the Council on Pharmacy and Chemistry along with a number of other products of Reed and Carnrick in 1907. The report "Reed and Carnrick's Methods" announced that none of the products examined were eligible for New and Non-Official Remedies. The following is an abstract of the report on Peptenzyme-Peptenzyme elixir and powder are said to contain "the enzymes and ferments of all the glands which bear any relation to digestion"; therefore, the peptic glands, pancreas, salivary glands, spleen and intestinal glands. The preparations are said to be "not chemical extracts, but pure physiologic products." Apparently Peptenzyme powder consists of the glands, dried and powdered, while the elixir is an extract. It is stated that these preparations digest proteids, starch and fat, and in addition stimulate and nourish the digestive glands, and that the ferments in these preparations do not interfere with or digest one another. Examination by the Council showed that these preparations were practically devoid of any power to digest proteids or fat when tested by the U. S. P. method. The claim that the product contained ferments which would not show this activity in the test tube, but become active in the elementary canal, is contrary to known facts and could not be substantiated by the manufacturer. The claims made for Peptenzyme powder and elixir were held to be unwarranted. (Jour. A. M. A., May 17, 1919, p. 1484).

Kline's Nerve Remedy.—This epilepsy nostrum was analyzed by the A. M. A. Chemical Laboratory and found to be a bromid preparation and practically identical with Waterman's Tonic restorative.

Chase's Rheumatic Specific.—The A. M. A. Chemical Laboratory found this to have essentially the following composition: Sodium salicylate 22.4 per cent., magnesium oxid 5.3 per cent., licorice root 72.3 per cent.

Diabetol.—In 1910 Professor Millspaugh at the Field Museum, Chicago, found this herb to be from a shrub —Stenolubium stans (L)—growing in Arizona, Mexico and Central America.

Varnesis.—Some time ago, the State chemists of Connecticut found this to contain 18 per cent. alcohol and less than 1 per cent. vegetable extractives derived from laxative drugs and capsicum. Later the alcohol percentage was reduced to 15.

Viavi.—Viavi Capsules were analyzed for the California State Medical Journal and reported to contain nothing but extract of hydrastis and cocoa butter.

Nuxated Iron.—The analysis in the A. M. A. Chemical Laboratory indicated that Nuxated Iron Tablets contained only 1-25 grain of iron, while the amount of nux vomica was practically negligible. Nuxated Iron has been advertised by an extensive campaign of misrepresentation and exaggeration (Jour. A. M. A., May 24, 1919, p. 1560).

Sanosin.—Sanosin (first introduced as Sartolin) consists of a mixture of powdered eucalyptus leaves, flowers of sulphur, powdered wood charcoal, and oil of eucalyptus. The instructions to the consumptive are that this mixture should be placed on a slab under which an alcohol lamp is burning. The whole thing is to be operated in a room which is tightly closed and in which the consumptive is supposed to stay (Jour. A. M. A., May 24, 1919, p. 1561).

Town's Epilepsy Treatment.—This is a bromide epilepsy preparation and was analyzed by the A. M. A. Chemical Laboratory (Jour. A. M. A., May 24, 1919, p. 1561).

The Williams Treatment.—According to the Dr. D. A. Williams Company, which sells it on the mail order plan, the Williams Treatment "conquers kidney and bladder diseases, rheumatism and all other ailments when due to excessive uric acid." The Williams Treatment was analyzed in the A. M. A. Chemical Laboratory and from the results of the examination it was concluded that it is essentially a mixture containing in 100 Cc. 48 Gm. potassium acetate in solution and about 7 Gm. potassium bicarbonate, the latter being largely undissolved. The mixture is colored with caramel and flavored with oil of wintergreen or methyl salicylate (Jour. A. M. A., May 31, 1919, p. 1632).

Investigation Based on False Premises.—One sometimes reads in supposedly "Original Articles" in medical journals statements that seem puzzlingly familiar. If one is sufficiently inquisitive and possessed of a germ of Sherlock Holmesism, the familiar statement may be traced to the "literature" for some proprietary medicine with which the author's article deals. The unwisdom of authors accepting the unconfirmed statements of the promoters of proprietary remedies is well illustrated in a recent report of the Council on Pharmacy and Chemistry on "Collosol Cocaine," a preparation claimed to contain 1 per cent. of cocain in colloidal and relatively nontoxic form. The report brings out that men of good standing had reported "Collosol Cocaine" to be much less toxic than cocain. These men, however, did not verify the statement of its composition, and subsequent investigation by others brought

out the fact that "Collosol Cocaine 1 per cent." contained buy 0.26 per cent. cocain, and that its toxicity was in accord with the amount of cocain found. Those who investigate the action of drugs must recognize more fully than has often been done in the past, that a study of a medicament is of no scientific value whenever the identity of the substance is not established. (Jour. Ind. State Med. Assn., May 1919, p. 135).

Therapeutic Evidences.—Has the medical profession learned to distinguish between real therapeutic evidence and chance observation? If so, the profession will not be impressed by certain testimonials for a widely advertised ointment. The wise physician who reads the testimonials will ask: Was it the "baking" or the proprietary ointment which produced the "remarkable results" in "rheumatic affections and ankylosis"? Was the "contracted arm chronic" benefitted by time and friction or by the proprietary? How did the physician know that "anointing the nostrils" prevents attacks of influenza? Those who are inclined to give credit to drugs for naturally occuring events may be interested in the statement of a prominent chemist that he has been free from his periodical colds since he arranged for an inoculation with a "cold" vaccine but was prevented from keeping the appointment (Penn. Med. Jour., May 1919, p. 524).

PROGRESS IN MEDICINE AND SURGERY

PUPILLARY STUDIES, WITH SPECIAL REFERENCE TO ANISOCORIA: Wm. Tarun, M. D., (Trans. Amer. Ophth. Soc. 1917, vol. xv, p. 301). Tarun has investigated the frequency and diagnostic value of inequality of the pupils, and to this end has examined records of 3,610 private patients suffering from non-inflammatory affections of the eyes. Examinations were made in a dark room with a constant source of light. The reaction of the pupil was determined with a concave mirror, used at a distance of rather more than its focal distance. Anisocoria was looked for under the same conditions with a plane mirror, at a distance of one metre from the patient. In Tarun's opinion, the daylight test should be discarded. The examination of the pupils should be made under quiet conditions, in order to exclude the psychic reflex. Two minutes should be allowed for dark adaptation. The author feels sure that on occasion Haab's cortical pupillary reflex has been mistaken for an Argyll Robertson pupil. Anisocoria was found in 19.39 per cent. of the cases examined. Normal eyes average 18.54 per cent., which gradually rose in diseased eyes and lesions of the nervous system until 70 per cent. was reached in the instances of Argyll Robertson pupil. Tarun is rather sceptical in believing that there is such a condition as physiological anisocoria, although Bach and Behr think it does exist. "In view of the percentage of anisocoria in the normal eyes there must have been some condition present, eliminating a toxin, during the lifetime of the individual, acting not upon the motor supply of the sphincter muscle of the iris, but upon the sympathetic fibres to the dilator pupillae." Tarun believes that inequality of the pupils is of seanty value when the pupils are active to light, when there is merely a slight difference in size, and even in some cases when a marked difference exists. When there is a slight difference in size, together with inactivity to light, directly or consensually, it is of the utmost value in determing the site of a lesion of the cerebro-spinal axis. It is useful at times when one pupil or both pupils are not uniformly round and sluggishly active.

The communication ends with a bibliography containing thirty-three entries. CARL L. LARSEN.

SACROILIAC RELAXATION OR SEPARATION. J. Torrenee Rugh, M. D., (Therap. Gaz., Dec. 15, 1916).

The author reviews the causes, symptoms, diagnosis and treatment of sacroiliac relaxation or separation.

He states the laity are willing to take up with the diagnosis of this condition, because they so readily understand just what has happened. He believes that X-ray examination is of very little help in diagnosis, when a true relaxation has oecured.

Tuberculous disease of the sacrum or ilium, pyogenie infection of the bones or joints, chronic sprains of the back, sciatica, congenital malformations of the fifth lumbar vertebrae, sarcoma and appendicitis must be differentiated from this condition. The differential diagnosis is sometimes difficult, except through therapeutic test of strapping after manipulation and reduction of the part.

Treatment:

I. Reduction, either under an anesthetic or without, by flexion or extension of the thigh.

II. Adhesive tape below the anterior superior spine, firmly strapped to the pelvis. Occasionally corsets, plaster-paris jacket or steel braces are necessary.

III. Sometimes bone-graft from ilium to sacrum is resorted to. C. C. CHATTERTON.

BOVINE TUBERCULOSIS IN CHILDREN: R. S. Austin, M. D. (Ameriean Journal Diseases of Children, April, 1919). Austin analyses 24 cases of tuberculosis in children and infants with reference to the bovine or human type of infecting organism. The ages ranged from 2½ months to 11 years, all but three died and 14 were autopsied.

Determination of the type of bacillus was based on the result of inoculations of rabbits with known amounts of culture.

His results show seven of the twenty-four to be infected with the bovine type of tubercule bacillus. The three living cases, one of human type and two of bovine are cases of bone or joint tuberculosis apparently localized. There is little indication regarding higher or lower percentage of bovine infection at different age periods. One out of nine under two years showed bovine infection and all seven of bovine type are under six years. While this is a small series he thinks that finding seven out of twenty-four cases to be caused by bovine type ot organism emphasizes the importance of this variety of the tubercule bacillus in tuberculosis of children; and, as it is generally considered that bovine

infection is through cows milk the fact that these seven cases occured in Chicago where all milk is supposed to be pasteurized, points to the necessity of home pasteurization. W. D. Beadie.

THE EYESIGHT OF THE NEGRO OF AFRICA: Dr. J. N. Roy (Arch. of Ophth. vol. XLVIII, No. 1) who during a recent tour throughout Afirca visited twenty-two different colonies studied anatomically, physiologically and pathologically the eye of five thousand negroes of one hundrd different tribes.

In his investigation of the visual activity in the black man, he employed de Wecker's chart placed at a five meter distance and retinoscopy. Because of the very bright light and clearness of atmosphere in the Dark Continent an emmetrophic eye which in northern countries would have a vision of 5.5 or even 6.5 would in Africa obtain 7.5 vision. A visual activity of 7.5 was therefore taken as normal sight in that country or tropical places.

A survey of the geography and ethnology of Africa demonstrates that different races come in more or less intimate relationship through association, intermarriage and wars. Where these relationships are most evident, inherited disease results as a consequence, namely syphilis, trachoma, purulent ophthalmia and small pox. It may be said in general that those people living north of the fifth degree latitude suffer more from ocular disease from the causes above enumerated than do those living south of this line.

An examination of the eyes of negroes discloses a marked degree of pigmentation; the iris and choroid and at times the ocular conjunctiva opposite the external canthus are saturated with it. A physiological condition of melanosis of the soft palate and gums is not infrequently demonstrable.

Emmetropia is almost the constant finding in the African blacks, the average vision of the natives being 12.5. One patient affected with sleeping sickness had a visual activity of 20.5. At this point the author comments upon the great resistance of the African to human trypanosomiasis. Simple myopia was found in the proportion of about 1.5 per 100; myopic astigmatism 1.5 per 100; simple hypermetropia and hyperopic astigmatism 2.5 per 100. In simple myopia the author never used a glass higher than 4 diopters, in myopic astigmatism a cylinder never higher than —2.5; in simple hypermetropia a sphere never higher than +2.5. In no other race is the ability to see to great depth in water so nicely developed. In spite of the most careful researches the writer was unable to discover a single case of alteration in color vision or hemianopsia; keratoconus and keratoglobus are in Africa non-existant.

Experimentally, Dr. Roy has proven that the African negro sees at night two to four times better than whites, which in his opinion is accounted for by the fact that the natives employ their eyes after dark to a greater extent than do the Caucasians.

Another fact worthy of note brought forward by the author: native Africans have a greater power of accommodation. Unfortunately his experiments were conducted only upon individuals between 13 to 30 years of age.

The higher the human being arises in the social scale the more man's brain is developed at the expense of the organs of special sense, especially vision and hearing, the author states in conclusion. Sight and hearing in the civilized become defective because of strong artificial light and injurious noises. Diathesis is transmitted from generation to generation and excesses of all kinds are indulged in. The African negro must pay the price for civilization.

P. D. Berrisford.

BASAL-CELL EPITHELIOMA*: A. C. Broders, M. D., Mayo Clinic, Rochester, Minn. (Jour. Am. Med. Ass'n., 1919, 72,856).

The cases of basal-cell epithelioma in the present series represent 13.4 per cent of 2,000 cases of general epithelioma.

Basal and squamous cells can be shown intimately connected in a neoplasm.

It seems to be a well-established fact that a basal-cell epithelioma can change into a squamous-cell epithelioma or at least into an epithelioma in which the squamous cells predominate.

The condition occurs more often in males than in females, the proportion being about three to two in favor of the former.

The disease occurs in patients past middle life; their average is 56.7 years.

It occurs more often in farmers than in any other class of people.

A family history of malignancy and a personal history of injury play a negligible part.

Previous mole, wart, pimple, excema, scab, ulcer, etc., are associated in 37.1 per cent of the cases.

The duration of the lesion shows a marked variation; it extends from three months to forty-five years, with an average of seven years and one month.

Ninety-six and twenty-eight hundredths per cent of all the lesions occur above the clavicle.

Thirty-six and nineteen hundredths per cent of all the patients were either operated on or treated with acids, carbon dioxide, etc., before entering the Mayo Clinic.

In approximately 75 per cent of all the cases treated at the clinic there was either one excision with the knife alone or one excision with the knife immediately followed by cautery.

Of the 54.1 per cent of patients heard from 75.86 per cent are living, of which 75.45 per cent report a good result.

In the cases in which a good result was reported 74.68 per cent of the patients had either one excision with the knife alone or one excision with the knife immediately followed by cautery.

The patients who had been treated with acids, carbon dioxide, etc., before entering the clinic did not get so good a result as those who had had no previous treatment.

The low grade of malignancy of the neoplasm is evidenced by its long duration, lack of metastasis in

*Abstract of paper presented before the meeting of the Southern Minnesota Medical Association, January, 1919, Mankato.

a single case in this series, response to proper surgical treatment, and by the fact that 75.45 per cent of the patients reported living have been free from the disease on an average of 6 years, 1.6 months.

Of the patients reported dead, fewer than one-third died from this disease.

The average greatest diameter of the tumors which did not recur after treatment was 1.75 cm.; of those which showed slight recurrence it was 2 cm., and in patients who were not improved by treatment, the average diameter of the tumor was 3.75 cm. The average greatest diameter of the lesion in patients known to be dead was 2.67 cm., while the average greatest diameter of the lesion in patients who died of basal-cell epitheloima was 4.32 cm.

Excessive exposure to sunlight as a cause of the neoplasm has not been borne out by the facts in our series of cases. It was noted that the hand, which is exposed to sunlight at least as much as any part of the body above the clavicles, did not show lesions.

Practically all of the neoplasms in our series had their origin in the germinal layer of the epidermis of the skin; only one was demonstrated to have originated from a hair follicle.

A STUDY OF THE ETIOLOGY OF CHOLECYSTITIS AND ITS PRODUCTION BY THE INJECTION OF STREPTOCOCCI*: R. O. Brown, Division of Experimental Bacteriology, Mayo Foundation, Rochester, Minn.

The work reported by the author is similar to that done by Rosenow in 1914 except that all gall bladders removed at operation in the Mayo Clinic, regardless of the degree of pathologic changes, were cultured.

The tissues were cultured as soon as possible after their removal, every effort being made to prevent contamination. Immediately before emulsifying, the tissues were thoroughly washed in large volumes of physiologic sodium chloride solution. They were then ground in mortars within sterile air chambers or in a hood, the air of which was washed by means of steam from a sterilizer fastened to the end of the hood. The operator wore gloves and sleeves which, with the materials used, were sterilized in the sterilizers opening into the hood. The emulsions thus made were inoculated in varying concentrations into tall columns of dextrose brain broth, blood broth, litmus milk, ascites dextrose broth, ascites dextrose agar and dextrose agar. Krumwiede plates of dextrose blood agar and plain blood agar plates were poured also. The cultures were studied at the end of twenty-four hours, but those that were negative were examined daily for a week.

Altogether, cultures were made from seventy gall bladders and four ulcers. At first cultures were also made from the contents of the gall bladders, but because of the large number of negative results, regardless of the findings in tissues, this was abandoned.

The duration of the symptoms in the cases studied ranged from three months to thirty years. The pathologic changes ranged from slight to marked thickening of the walls.

In the gall bladders showing slight changes 30 per cent only yielded streptococci, in contrast to 75 per cent in those showing marked changes. Moreover, the gall bladders in which marked changes existed showed the larger number of colonies. Some of these contained countless numbers of organisms, while those showing slight changes, with few exceptions, contained a small number. Of the latter 58 per cent gave no growth, while only 25 per cent of those showing marked changes gave no growth. In the cases showing slight changes, colon bacilli were isolated in pure culture from 12 per cent and in combination with streptococci from 6 per cent. The entire 15 per cent of those with marked changes contained both colon bacilli and streptococci.

Some of the organisms, when first isolated, produced opaque, indifferent colonies on blood agar, and microscopically were grouped in diplococcus forms with little or no chain formation. Further study, however, proved them to be streptococci. In this connection an interesting observation was made. From one of these cases, showing a pure culture of opaque gray staphylococcus-like colonies, two strains derived from a single colony were studied. The one kept on blood agar alternately aerobically and anaerobically became a green-producing streptococcus. The other, planted alternately in dextrose brain broth and on aerobic and anaerobic blood agar slants, developed hemolytic powers.

The different strains varied somewhat in their fermentative powers. Of the eighteen studied, all fermented dextrose, lactose and maltose, three raffinose, four mannite, ten salicin and one inulin. One strain, after a single animal passage, had its fermentative powers changed, but it was still agglutinated, the same as the original strain.

Microscopic examination of the gall bladders failed to reveal bacteria when negative cultures were obtained, but bacteria were found consistently when the cultures were positive. Organisms were found in the lesions produced in rabbits, but were not found in normal tissues. At the suggestion of Dr. E. S. Judd, microscopic examination of liver sections which he removed were made in ten cases. Interlobular cirrhosis was found in six, no change in two, and a bile-duct involvement in two. The livers which were normal and those showing fibrotic changes, were found in cases in which the gall bladders showed marked and slight changes, while in those showing cholangitis there was little or no change.

EXPERIMENTAL SURGICAL SHOCK*: F. C. Mann, M. D., Division of Experimental Surgery and Pathology, Mayo Clinic, Rochester, Minn.

The writer reviews the results of the investigations of experimental surgical shock with special reference to the phases bearing on its relation to anesthesia. It is emphasized that the condition termed shock by the surgeon is undoubtedly due to a large number of causes, and that experimentally, it is very difficult to reproduce the environment and all the phenomena that a surgeon calls shock. The kinds of shock the

*Abstract of paper to be published in the Arch. Int. Med., 1918.

*Abstract of paper presented before the Seventh Annual Meeting of the American Association of Anesthetists, Atlantic City, June, 1919

anesthetist is interested in are discussed. The methods of producing experimental shock and the probable factors involved are considered. All cases of shock appear to be capable of classification into one or two divisions. (1) Those cases in which the condition develops immediately after the exciting agent, and (2) those in which an interval of time elapses before the development of the condition. In the first group, the nervous system is probably the main factor in the cause, and inhibition seems to be of more importance than excitation. In the next group, the end result, and probably the cause of symptoms, is a loss of circulating fluid. In all probability many factors can produce this loss of fluid. With regard to treatment, it is noted that the transfusion of blood appears to give better results than any other method.

AN EXPERIMENTAL STUDY OF THE EFFECTS OF DUODENECTOMY. A PRELIMINARY REPORT*: F. C. Mann and K. Kawamura, Division of Experimental Surgery and Pathology, Mayo Clinic, Rochester, Minnesota.

The author's investigation was undertaken for the purpose of determining the effects of the removal of the duodenum. Previous work on the problem has been reviewed. The anatomy, physiology, and pathology of the duodenum, and their relation to the extirpation of the organ are discussed. A one stage operation for the removal of the duodenum was developed. The duodenum was removed from the dog, cat, hog, goat and monkey. Careful studies on the dog did not reveal any noticeable changes following the duodenectomy. The animals remained in good condition. Examination of the blood showed it to be normal with regard to cell counts, hemoglobin, carbon dioxid combining power and hydrogen ion concentration. The X-ray showed the course of a standard barium meal to be practically the same as in a normal dog. Experiments on the other species have been too recent to allow conclusions to be drawn but it would seem that the removal of the duodenum in the hog is as innocuous as is its removal in the dog. No data have been secured to show that the duodenum is of great importance in any of the species used. Future studies may give more positive results.

HEMATOGENOUS INFECTIONS OF THE KIDNEY: William J. Mayo, M. D. (Abstract of paper presented at A. M. A. Session June 1919). Bright's disease involves both kidneys and occurs in two forms which are often confused: Type one, so-called acute parenchymatous nephritis, and Type two, the chronic interstitial nephritis. Type one is a true nephritis involving the kidney filter chiefly and is caused by specific toxins the result of infections usually derived from lesions of the skin and mucous membranes, for example scarlet fever and diphtheria. The kidneys are large, white, and soft. In the acute phase edema from chlorid retention is frequent. The urine is loaded with albumin, casts, and blood corpuscles. Sometimes the disease begins subacutely and pursues a chronic course with irregular deposits of connective tissue in the kidney, and sometimes Type one nephritis is grafted on the chronic contracted organ (Type two), causing confusion of type.

The chronic form (Type two) which involves the connective tissue and blood vessels chiefly is not a true nephritis. Its cause, so far as is known, is not connected with infections, and the disease is incurable. The kidneys are contracted, hard and granular from deposits of connective tissue. The vascular system is always involved to a greater or less extent, and the heart is so often affected as to make the appelation of cardiorenal disease appropriate in some cases. The urine is usually clear and abundant, especially at night; it is of low specific gravity and sometimes contains albumin and casts. The clinical course of the chronic form is marked by hypertension and uremia from retention of urea and other compounds. The disease may exist in the latent form for many years.

Hematogenous infection of the kidney causes a third type of nephritis which, in its chronic form, has in the past been confused with Bright's disease, and in the acute form with inflammatory conditions in the abdomen. Hematogenous nephritis is an infection with living microorganisms. The disease may involve the kidneys unequally, or it may be unilateral. Congenital or acquired defects in a kidney render it more vulnerable to the infecting agents which vary greatly in virulence. In the fulminating forms, if both kidneys are involved, as with streptococcus, death results; if the involvement is unilateral, early nephrectomy may save life. In the subacute forms septic infarcts and cortical abscesses may necessitate nephrectomy, or the spontaneous evacuation of a cortical abscess in the fatty tissues may lead to a peri-nephritic abscess, or the whole kidney may be destroyed, causing a pyonephrosis. Since the cause of hematogenous nephritis is a pus-producing coccus of relatively short life, no living organisms may be found in the later stages and the varying results of the infection-scar tissue and other evidences introduced in the process of repair of the damage—may produce confusing pictures to the pathologist, especially if the infection is implanted on a kidney already the subject of Bright's disease.

In many instances the kidney may recover its function and after this process, if painful scars remain, the pain may be relieved by capsulotomy. At times carbonate of calcium is deposited in the infected area in the process of cure; this produces x-ray shadows which may be mistaken for the ordinary kidney stone. The surgeon today is as much interested in the pathology of the kidney as is the internist, and the surgeon's work tends to bring forward the pathology of the kidney in the living for comparison with the clinical findings. Heretofore attempts have been made to correlate the clinical with the postmortem findings which often do not show the true condition during life but rather the terminal condition which caused death.

CANCER OF THE STOMACH: Charles H. Mayo, M. D. (Abstract of paper presented before Am. Surg. Assn. June 1919). The greatest number of cancers come in the area of highest acidity, the stomach. More than

*Abstract of paper presented before the Section of Pathology and Physiology at the Seventieth Annual Session of the American Medical Association, Atlantic City, June 9-13, 1919.

one-third of the cancers in men and more than one-fifth of the cancers in women appear in this organ. Ninety-eight per cent of intestinal cancers are in the colon, whilecancer in the small intestine is rare, about 2 per cent.

In taking a general survey of the various theories and reviewing the clinical evidence concerning the etiology of gastric cancer, it seems that not one but several conditions are essential to its development. The change from the normal to the cancer cell is not great. In a general way it may be said that the nucleus is proportionately larger in the cancer cells than in the normal cells and is ready for division with less than the average amount of cytoplasm surrounding it. When some cell exhausts its controlling granules in division, and reverting to primitive life, becomes parasitic, we may have the beginning of cancer, but only if other factors are present, such as acid condition, which undoubtedly stimulated cancer growth, or greatly lowered alkalinity. It is reasonable to assume concerning the normal division of a cell that the brain directing its division comes from the centrosome; possibly other granules may serve this purpose.

From October 1, 1897, to January 1, 1919, 2094 operations for cancer of the stomach were performed at the clinic. Seven hundred thirty-six of these were re-sections with a mortality of 13.7 per cent, 746 were explorations with a mortality of 2.9 per cent, and 612 were palliative operations with a mortality of 11.1 per cent. The common type of operation was the Mikulicz, Hartmann, Billroth No. 2, of which there were 359 with a mortality of 12.5 per cent. There were 19 of the Billroth No. 1 type with a 5 per cent mortality, 28 sleeve resections, and 7 Kocher operations with a mortality of 14.2 per cent each, 115 posterior Polya operations with a mortality of 14.7 per cent, and 120 anterior Polyas with a mortality of 13.3 per cent. The local resections, 12 in number, gave the highest mortality, 25 per cent. These 660 resections have been done since 1906. Prior to this the type of resection was not described in the records definitely enough to be included in a statistical report.

For the last three years the anterior instead of the posterior Polya operation has been done in the clinic. Better after results seem to be obtained by turning the bowel to the right, isoperistaltic, by closing the end of the stomach in toward the lesser curvature, and protecting the closed portion by suturing the unopened bowel over it.

Four hundred twenty-seven patients were operated on during the three years previous to September, 1917. Those who died in the hospital and those not heard from number 121. Those who recovered from the operation and who have been heard from number 306; 115 (37.6 per cent) of these show three year cures. Three hundred thirteen patients were operated on during more than five years before September first, 1917. Those who died in the hospital and those not heard from number 79. Those who recovered from the operation and who have been heard from number 234; 59 (25 per cent) of these show five year cures. This is a most satisfactory showing for the surgical relief of an otherwise hopeless condition which is attended by much suffering.

CLINICAL OBSERVATIONS CONCERNING THE FRAGILITY OF ERYTHROCYTES: H. Z. Giffin, M. D. and A. H. Sanford, M. D., Rochester, Minnesota (Abstract of paper presented before the American Society for Clinical Investigation, Atlantic City, N. J., May 6, 1919. To be published in Jour. Lab. and Clin. Med., 1918.) Considerable confusion concerning the fragility of erythrocytes in various clinical conditions has been the result of (1) the different methods used in making the test. (2) the reporting of small groups of cases, and (3) the failure to make a control test with each test or each group of tests. The method used in the authors series of cases is a simplification of the Ribierre test. The use of a control has proved to be necessary first, in order to test the accuracy of the hypisotonic salt solution, and second, in order to have a more accurate method of comparison for judging definite increases of fragility or increases of resistance. The use of a fixed normal leads to considerably more inaccuracy.

The series tested includes 225 cases. The groups of secondary anemia and pernicious anemia corroborate former reports showing a normal resistance or a definitely increased resistance in these cases. Fourteen cases of splenic anemia, carefully selected, showed a very definitely increased resistance. One patient, two years and ten months after splenectomy revealed a very marked increase of resistance. Twelve cases of myelocytic leukemia showed a very striking adherence to normal resistance; no case of this group showed a definite increase of fragility or an increase of resistance. Twenty-five cases of hemolytic jaundice showed a definitely increased fragility. One patient only in the group showed a normal resistance; this was in a definite, though mild, case. In two cases of hemolytic jaundice, even though the age of the patient at onset was approximately 20 years, one parent revealed an increased fragility, indicating a probable hereditary factor in cases which might otherwise be classified as acquired. Twelve patients with hemolytic jaundice, after splenectomy showed the same definitely increased fragility as compared with controls, although in certain individual cases there seemed to be a slight decrease of the degree of fragility.

The test for fragility of erythrocytes in hypisotonic salt solution is of definite practical value especially in the diagnosis of all those diseases which may simulate hemolytic jaundice. It is more accurate when compared with a control test of normal blood.

INTRANASAL DRAINAGE OF THE LACRYMAL SAC: J. V. Paterson, M. B. F. R. C. S. and J. S. Fraser, M. B. F. R. C. S. (The Brit. Jour. of Ophthal. May 1919, Vol. 111, No. 5) report very fine results by this method of treatment in a series of 50 consecutive cases from which it is deduced that the intranasal method of treating chronic dacryocystitis surpases the more drastic method of complete excision of the tear sac. The authors state that it requires at most fifteen minutes to perform the intranasal operation.

Often a troublesome epiphora exists after excision of the sac. If then by proper drainage into the nares a chronic dacryocystitis can be cured, the operation of choice in the future must be that devised by West or some modification of same. GEORGE C. DITTMAN.

BOOK REVIEWS

SURGICAL CLINICS OF CHICAGO. (April 1919, vol. 3, No. 2. W. B. Saunders Co., Philadelphia. $10.00 per year).

A well balanced number with several articles of more than ordinary interest. Bevan discusses at some length the ordinary clinical side of appendicitis with a summary of the historical side of the subject. Andrew's article on the multiple drilling of fractures shows that by this simple means many ununited fractures can be made to unite and thus makes unnecessary in numbers of cases the use of the bone graft or other operative means. The discussion of fracture of the carpal scaphoid by McCarty emphasizes the necessity of always being on the lookout for this common injury as many disabled wrists are directly due to the non-recognition of this condition. The other articles in the volume are all worth reading. W. H. C.

A TREATISE ON ORTHOPAEDIC SURGERY. (Royal Whitman, M. D., M. R. C. S., Eng., F. A. C. S. 6th adition. Lea & Febiger. $7.00).

This book has long been the standard text book of orthopedic surgery and the new edition only serves to further fix it in its well deserved position. Clean cut and concise it gives, as no other single volume does, the essentials of orthopedic diagnosis and treatment. The chapter on military orthopedics and reconstructive treatment is new and shows the advances made by this branch of surgery during the war. W. H. C.

ANATOMY OF THE HUMAN BODY. (Henry Gray, F. R. S. 20th edition, thoroughly revised and re-edited by Warren H. Lewis, B. S., M. D. Lea & Febiger.)

The twentieth edition of this classical work brings the book up to date by adding "new matter in physiological anatomy, laws of bone architecture and mechanics and variations of muscles." The sections on the ductless glands and the nervous system have been largely rewritten and there has been a rearrangement of the sections on embryology and histology. For many years this book has been one of the best of anatomical text books and this new edition makes it more prominent than ever. W. H. C.

ELECTRICITY IN MEDICINE. (George W. Jacoby, M. D. and J. Ralph Jacoby, A. B., M. D. P. Blakiston's Son & Co., Philadelphia. $5.00).

In the employment of any therapeutic agent however specific in its action, a certain degree of empiricism must be admitted. This is particularly true in the application of electrical phenomena. However, a fundamental knowledge of the laws governing its use, a proper understanding of the instruments employed and a precise meaning for all expressions used are therefore prerequisites that should be mastered by one applying this agent. "Electricity in Medicine" is well written, amply illustrated and can be read with profit.

P. D. Berrisford.

THE OPERATIONS OF OBSTETRICS. (Frederick E. Leavitt, M. D. C. V. Mosby Co., St. Louis. $6.00).

This book is the second of its kind by an American author. It contains 248 very excellent illustrations, a large number of them being original by the author; and has 441 pages of reading matter. Six years were consumed in its preparation and while parts of it were rewritten innumerable times, the entire manuscript was rewritten six times before it was given to the publishers. The style is pleasing, easy and direct, the author presenting the subject in the fewest words possible. He does not wander from his text and there is no space devoted to the consideration of etiology, theory, physiology, nor medical treatment and only enough to pathology to pave the way for a discussion of the surgical treatment. Conservation and a well balanced judgment display themselves throughout the whole work. A striking and very excellent feature is the discussion devoted to the question of prognosis for mother and child afforded by the various surgical procedures. Another feature is the concise table of statistics taken from the large European clinics. A careful reading of the whole volume revealed only two minute typographical errors. This is a timely and praiseworthy volume and merits a place in the library of every medical man.

A. G. Schulze.

NEW AND NON-OFFICIAL REMEDIES, 1919. (Price, postpaid, $1.00. Chicago: American Medical Association, 1919.)

In this book are listed and described those proprietary remedies which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association and which should, therefore, merit consideration by the medical profession. The book also includes the newer nonofficial nonproprietary remedies that seem to the Council to give promise of therapeutic value. New and Nonofficial Remedies makes use of the Federal Trade Commission names for products originally introduced into this country by German manufacturers. These include arsphenamin, barbital and procain preparations replacing salvarsan, veronal and novocain respectively. The Council has omitted from the present edition all articles not now on the market many of them originating in enemy countries. Among the most valuable features of this book for the physician are the thorough discussions of various therapeutic substances, including composition, dosage, therapeutics, actions and uses, etc. The articles on digestive ferments, serums and vaccines and silver preparations have particularly been thoroughly revised, and it will be to the interest of every physician to acquaint himself with the present status of knowledge regarding the use of these preparations as brought out in this book. In a supplement to the book are given references to the reports of the Council on Pharmacy and Chemistry and the publications of The Journal regarding proprietary articles which have not been accepted. The material available in this book is nowhere else available and its authoritative character makes it a therapeutic guide which should be in the hands of every practitioner.

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ORIGINAL ARTICLES

AN EPIDEMIOLOGICAL INVESTIGATION OF THE INFLUENZA EPIDEMIC AT CAMP DODGE, IA., 1918

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Extra Cantonment Sources of Influenza at Camp Dodge

There is a remarkable similarity in the epidemiology of the Epidemics of Influenza of both 1889-90 and 1918. They are characterized by (1) the traditional boat bringing the disease to this country; (2) the very sudden, almost simultaneous, origin of the epidemic throughout the entire country; (3) the equally sudden departure of the disease after a certain proportion of the population has been attacked; (4) the uniformity of symptoms, and (5) death resulting in almost every instance from pneumonia, complicating influenza.

During the epidemic of 1889-90, because of the fact that the epidemic prevailed all over the country at almost the same time, theories were advanced that influenza originated from within each community at about the same time. The organism which caused influenza being the normal habitant of the nose and throat, each person exposed himself, so to speak. Even at the present time, many men will agree to this explanation of the almost simultaneous origin of the disease in the various sections of the country.

CHART I. This chart shows conclusively that the epidemic of influenza at Camp Dodge during the latter part of September and the first three weeks of October, 1918, was brought to the Camp along the routes of travel from other places where influenza was prevalent, by men who had contracted the disease either in a mild and unrecognized form and were not admitted to the base hospital, or by men who gave definite histories of having contracted influenza before their arrival at this Camp and became patients in the hospital immediately thereafter.

The above information has been obtained by personal investigation of all troops arriving here from, or coming through cities in which influenza obtained.

From the first to the tenth of September, about 5,000 recruits were received from Iowa through the regular draft. There was no influenza in this state at this time as far as can be ascertained.

On the 14th of September, 120 enlisted men arrived from Fort Riley, Kansas. The medical officers who accompanied these men stated that there were a few cases of influenza in this camp when these men left. None of these men became sick until after the epidemic at Camp Dodge had reached its height. This group could not have been a source of infection except that they may have been carriers through having had mild, unrecognized cases.

On September 12, an enlisted man, assigned to Company 64, arrived from Chicago. He complained of signs not unlike those of influenza immediately after arrival but he was not admitted to the base hospital for influenza until September 28. He gave a history of having a cough and feeling weak since his arrival. It is possible that he had a relapse —his first attack being mild and unrecognized. Another man arrived from Chicago on the same day. No history was obtained from him, but the following information was taken from his chart; he had been feeling badly ever

since his arrival at the Camp; he lived only a few days after admittance to the hospital, dying of pneumonia, following influenza, on September 29. This was probably another case of relapse or reinfection.

On September 14, ten enlisted men came from Fort Logan, Colorado, with the Second Infantry, but none of these became sick until at least a week after their arrival.

On September 14, one hundred enlisted men and two officers were received from Fort Oglethorpe, Georgia, attached to base hopsital 144, temporarily stationed at this Camp. Of this number, twenty-three contracted influenza but none became sick earlier than October 3, which fact would eliminate this group as a probable primary source of infection throughout this Camp.

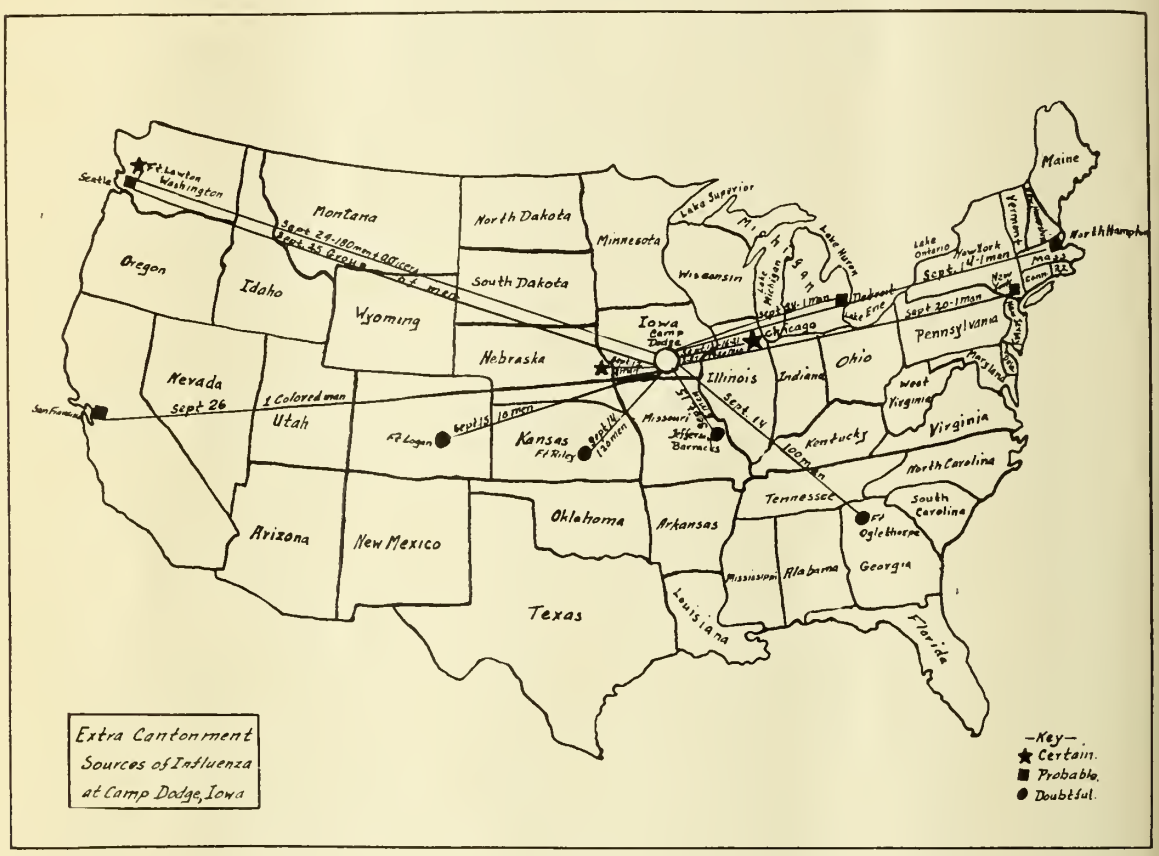

CHART I

On September 15, men came from Jefferson Barracks, Missouri, none of whom contracted influenza.

On September 14, one man came from Northampton, Massachusetts, where influenza was raging at that time. He stated that he had had a headache, malaise, and a cough about three days before he arrived at the Camp but he was never admitted to the base hospital as a patient. He may have had influenza and acted as a carrier in Company 64 to which he was first assigned, which was one of the first organizations to become affected.

On September 16, twenty-seven men arrived from Chicago, and were assigned to the motor convoy. Two of this group became sick immediately after arriving here and were sent to the base hospital with a diagnosis of bronchitis. All of these men were assigned to duties which brought them in contact with men from various parts of the Camp.

On September 21, thirty drivers of ambulances, who had gone to Chicago during the past week with truck ambulances, came back from Chicago after having stayed over two days. Two of this group were taken sick on the train, and were admitted to the base

hospital on September 22. Ten of the entire thirty contracted the disease. They were probably the greatest and earliest source of spread in this Camp.

On September 24, several officers and one hundred and eighty men came from Fort Lawton, Washington, with the Fourteenth infantry. Some of these men admitted that they were at Seattle for a few days at the time the epidemic was existent. Three of this group became sick on the train, and were admitted to the base hospital after arrival at this Camp. These men must have been a source of infection—first, to their companions; and—second, to all others in the Camp with whom they came in contact.

On September 25, another group of the Fourteenth Infantry came from Washington state through the cities of Seattle and Tacoma, but none of this group became sick with influenza as far as could be ascertained until about a week after they arrived at Camp Dodge.

On September 20, an enlisted man arrived from New York, assigned to Company 12. He had been sick a few days before coming to this Camp. The symptoms which he described were not unlike those of influenza. He may have been a carrier—influenza existing at that time in New York.

On September 24, a man came to this Camp from Detroit, Michigan, assigned to Company 9. He also had been sick for a couple of days with just a cough but no other signs of influenza. He was never admitted to the base hospital. He may have been a carrier. Influenza existed in Detroit at that time.

Another enlisted man (colored) arrived from San Francisco at this Camp on September 26, assigned to Company 76. No history of any sickness could be obtained from him when he first arrived at this Camp, but on September 28, he was admitted to the base hospital for influenza. Influenza existed in San Francisco at that time, and he may have been a carrier in his organization, as Company 75 was one of the first companies to be affected.

Another soldier in Company 32 had been on a furlough in Omaha, Nebraska, and returned to the Camp on September 20th. His wife, who was with him at the time, had been sick in Omaha with signs of influenza. On September 25, he was admitted to the base hospital with a diagnosis of influenza, developed pneumonia and died on the 29th.

There is no question in the mind of the writer but that the epidemic originated from without, through the usual routes of travel, certainly from the city of Chicago, and the State of Washington, and probably from Massachusetts, San Francisco, Omaha and Detroit.

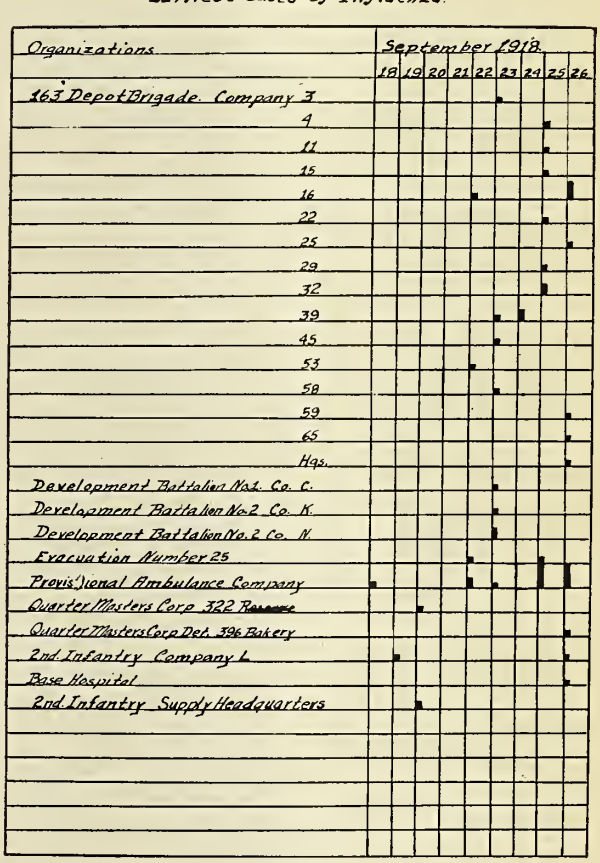

CHART II

By the 28th of September the disease was wide-spread throughout the entire Camp. It is unnecessary to cite any more instances of method of spread from one organization to another to prove that this disease is not air borne.

Intra Regimental Spread

CHART II. Shows the early cases of influenza and the spread throughout the various organizations.

The first known case appeared in the Provisional Ambulance on the 18th of September.

A few days later the disease appeared in this organization. The first case in Company 16 was exposed to a driver in the Provisional Ambulance, and in two days four of Company 16 were admitted to the base hospital.

This Chart shows that before the disease was reported in epidemic form to Washington, twenty-six companies had already been affected.

The Origin of Influenza and the Method of Spread in the Base Hospital at Camp Dodge

The data obtained and recorded in the following chapter was collected from personal questioning of the patients themselves, from the day books of the wards of the hospital and from the daily admittance sheets in the receiving office. Any information received from ward surgeons and nurses, unless confirmed by personal investigations, has not been recorded.

The epidemic of influenza in the base hospital could be definitely traced in almost every instance to the very first cases in each ward and then through transfers of patients from one ward to another.

The first case as far as could be ascertained of influenza, was admitted to the base hospital on September 18, after having been sick for two days. This was diagnosed bronchitis, and sent into ward 23, which at that time received miscellaneous medical cases.

At this time regimental surgeons and receiving officers were not especially on the lookout for influenza cases; and some of the earliest cases from September 18 to about the 23rd and 24th were diagnosed bronchitis, tonsillitis, observation pneumonia, reaction from typhoid, etc., which upon personal investigation seemed to the writer typical cases of influenza. Also there was an attempt made to confirm suspicious clinical signs of influenza by bacteriologic diagnosis but this was given up as impracticable. This, also, was the cause of some delay in the diagnosis of influenza.

In order to understand the above Chart II, it will be necessary to mention the arrangement and distribution of disease by wards in the base hospital.

Wards 1 and 3 were observation wards; ward 5 received miscellaneous medical cases, bronchitis, typhoid reaction, etc.; wards 7 and 9 were for observation pneumonia; ward 11, empyema; wards 13 and 15, pneumonia; wards 17 and 19, stomach; wards 21 and 23 miscellaneous medical; wards 30 and 32 miscellaneous medical; wards 2 to 18 inclusive, received surgical; wards 45 and 46, mixed contagious; wards 33 and 34, tuberculosis; wards 35 and 36, orthopedics; wards 37 and 38, syphilitic; Ward 39, nose and throat; ward 41, eye; wards 40, 42 and 44, genito-urinary; ward 47 psychiatric; wards 22 to 28 inclusive, measles.

There were 1,397 patients in the hospital on about the 27th of September when the first cases of influenza were telegraphed to Washington. 310 cases of influenza developed amongst these cases—the percentage of cross infection being 22 per cent. The highest percentage was in ward 28, 97 per cent developing influenza. Wards 11,15, 18, and 38 did not develop any cases.

Analysis of the above chart shows the following:

Ward No. 1.—This ward received observation contagious cases before the epidemic. Four of the six cases of influenza in this ward were sick with influenza upon admittance, the other two cases were cross infections.

Ward No. 2.—The first case in this ward was admitted on October 1. Private E., Co. 17. He was admitted a few days after the epidemic was recognized; he was admitted for a surgical disease with influenza, and was transferred to ward 20 on the next day, which was an influenza ward. Two other cases developed in this ward on the third and fourth of October, respectively. All the surgical cases were sent to ward 16, and this ward was opened for influenza cases on October 6.

Ward No. 3.—The high incidence of influenza in this ward was probably because a number of cases admitted early were diagnosed as bronchitis which were actually influenza. The first two cases were admitted on Spetember 22, diagnosed bronchitis. Private W. and Private H., of the Provisional Ambulance Company.

Ward No. 4.—The first case in this ward was admitted September 28: Private R., Co. 49; he had a surgical condition plus in-

fluenza; he was transferred to ward 1, October 1. On September 30, another patient who had been in the ward for some time developed influenza and was transferred to ward 18.

Ward No. 5.—This ward had a very high percentage of cross infections. A number of cases were admitted early for bronchitis but were influenza cases. The first two cases were, first—Private S., Co. I, Second Infantry, admitted September 24, transferred to ward 29, September 25 and to ward 23 on September 26; second, Private N., Provisional Ambulance Company, admitted September 25, and went to duty September 28.

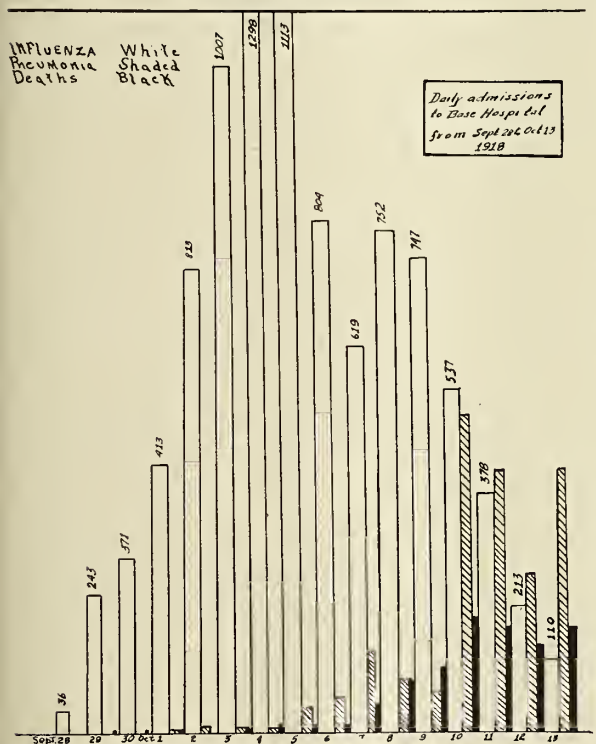

CHART III

Ward No. 6.—The first case, Private D., Co. D., Development Battalion came into this ward on September 10; developed influenza on September 28, transferred to ward 35. This man was an ambulatory patient, and admitted having been to the Red Cross house several times before contracting the disease; no definite history of contact could be obtained.

Ward No. 7.—The first case in this ward was Private A., Provisional Ambulance Company, transferred from ward 23 as an observation pneumonia and influenza on September 27. Private F., Provisional Ambulance Company, was transferred from ward 23 on September 28; and Private P., Co. 42, was admitted from ward 1 on September 23, both as observation pneumonia cases.

Ward No. 8.—This ward showed a very high incidence of influenza patients. The first case was Private F., C. 76, admitted to the ward on September 28, diagnosed hemorrhoids with influenza. He was transferred to ward 1 on account of influenza, October 1.

Ward No. 9.—Private T., Co. 29, was received from ward 23 on September 27 as a suspected pneumonia. He had influenza. Five other cases admitted from other wards for pneumonia developed influenza, and all were transferred to ward 7 on September 29. This ward was opened for pneumonia, following influenza on September 30.

Ward No. 10.—There was only one case in this ward: Private L., who was admitted on September 28 because of a bullet wound in his hand; he was also a diphtheria carrier and had influenza; he was transferred the same day, and another case developed in this ward. The same surgical cases were kept here throughout the epidemic.

Ward No. 12.—The first case was Private P., who had been in this ward a long time previous to the origin of the epidemic. He had been out to the Red Cross house several times, but no history of definite contact could be obtained from him. Six cases developed within two days after he showed first signs. This ward was continued as a surgical throughout the entire epidemic.

Ward No. 13.—There was no influenza in this ward until after patients were transferred from ward 7 on October 4. On October 6, nine developed influenza, and these were transferred to an influenza ward—no more cases developed from this group.

Ward No. 14.—Private S., Co. D., Development Battalion No. 1, was admitted as a genito-urinary patient with influenza on October 7; he was transferred on the same day to ward 2, which was an influenza ward. All the patients were transferred to ward 42 on October 8.

Wards Nos. 17 and 19.—The first case in ward 17 was Private A., Co. B., Development Battalion No. 1, he was admitted as gastritis on September 21, and was transferred to

ward 29 on September 25—the first ward to be opened up as an influenza ward—he ran a typical course of influenza. Private A., Supply Company, Fourteenth Infantry, was admitted on September 26 to ward 19, also for stomach disease; he was transferred to ward 29 on September 27 for influenza.

Ward No. 21.—Private L., C. H., Second Infantry, was admitted September 25 for a heart condition and bronchitis, was transferred to ward 30 on the same day; his history and symptoms were typically those of influenza. Private C., Provisional Ambulance, was admitted September 25 for influenza; he was transferred to ward 5 on the same day. These were the first two cases in this ward.

Ward No. 23.—Private K., Provisional Ambulance Company, was the very first case discovered in the hospital, admitted September 18. He went to duty September 24. This ward had a very high percentage of cross infections. There were thirty-nine cases in the ward and of these, twenty-eight developed influenza. This ward was made an influenza ward on October 2, and was the greatest source of cross infection in the whole hospital.

Ward No. 24.—The first case in ward 24: Private C., Co. 57, admitted to the ward on October 4, transferred from ward 45 as an observation measles; he never developed measles but he had a typical course of influenza, pneumonia and death. On October 5, a measles patient who had been up and around doing kitchen police work, contracted influenza. Within the next two days after that, eight developed influenza.

Ward No. 25.—The first case was Private C., Evacuation Hospital No. 25, who was admitted September 24 as mumps with influenza. One other case developed before the ward was opened as in influenza ward on September 29.

Ward No. 28.—The first case was Private H., Co. 39, who was transferred from ward 22 on September 25. He showed signs of influenza on September 29. On the next day, one ward surgeon, three nurses and fourteen patients developed influenza. Of thirty-seven cases, thirty-six developed the disease. This ward had the highest percentage of cross-infections. The cases in this ward were measles patients with streptococcic throats.

Wards Nos. 33 and 34.—These wards received their sources of infection from ward 23 through Private D., Co. A., Development Battalion No. 1, September 30, and Private P., Co. 61, September 30, Lieut. D., ward surgeon, contracted the disease two days after the admittance of Private D.

Ward No. 36.—This ward received its case of influenza from wards 6, 8 and 10 on the 6th of October. These wards sent fifty-five surgical cases, six of which were also cases of influenza. On October 8, a number of influenza cases developed amongst the original cases in ward 36, and these were transferred on the same day. No new cases developed after October 11.

Wards Nos. 37, 38, 40, 42, and 44 can be considered together. They were all genito-urinary and syphilis wards. One case was admitted September 27 in ward 37 for a genito-urinary condition and influenza, and was transferred to ward 38 on September 28. No cases developed in ward 38. All were sent to ward 42 on September 27. Ward 42 received all of the clean genito-urinary cases; of the thirty-eight which were originally in the ward, none developed influenza. On October 11, ward 40 sent to ward 42 all of its cases and some had already had the influenza. On the next day, seven were diagnosed as such and transferred to another ward. Two ward surgeons contracted the disease also. Wards 39, 41 and 43 were devoted to eye, ear, nose and throat conditions. The first case in ward 41 was admitted October 3. Five other cases developed within the next three days.

Ward No. 39.—In ward 39, cases were received from ward 43 on October 1; two cases were admitted on September 20 and 22, respectively, which had influenza along with tonsillitis.

Wards Nos. 45 and 46.—These wards were mixed contagious wards. There were no cases of influenza here before October 3, on which date Private A, was admitted as a tonsillitis and diphtheria carrier; he also had influenza at the same time; developed pneumonia, and died October 9. He exposed all the others in his ward, and all of them developed the disease.

In the mumps ward, eight of the fourteen cases were affected. In the scarlet fever ward, where there were three cases, an observation scarlet fever patient, which was really an influenza, was admitted but none of the scarlet fever patients developed the disease. There were four cases of small pox, all of whom had the influenza. These patients were very rigidly isolated from all others, and it is not known how these could have been exposed possibly through numerous flies which were admitted through the corridors where many influenza cases were treated. There were thirty original cases in these wards, and eighty-four were admitted during the course of the epidemic—of these seventeen developed influenza.

Ward No. 47.—There were twenty-three mental cases in this ward about September 27. Only four developed the influenza. The first case was probably Private B., who came to this ward on September 28 with insanity and influenza. Three others developed the disease.

Analysis of Eight Hundred and Thirty-four Cases of Influenza

Eight hundred and thirty-four patients, two hundred and ten of which had pneumonia, were personally investigated epidemiologically.

1. Age.—Sixty-one per cent occured between the ages of twenty and twenty-five; 32 per cent between twenty-five and thirty; 5.2 per cent between thirty and thirty-five; 1 per cent between thirty-five and forty. Although the great majority of cases were between the ages of twenty and thirty, no definite conclusions as to ages can be drawn because the ratio of ages in the total strength of the command is not known.

2. Race.—The total average strength of the command was 33,070. 29.3 per cent of negroes contracted the disease, and 30.4 per cent of white men contracted it. There were 550 Jews in the camp, and of these, 20 per cent contracted the disease. 16 per cent developed pneumonia, and 2.07 per cent died.

3. Masks.—Fifty-seven of the entire number questioned wore masks, but with the exception of the medical officers and nurses, none were worn adequately.

4. Contact.—Contact undoubtedly plays a great part in the spread of the epidemic. In 96 per cent of the cases, a definite history of contact could be obtained from the patients. The following are a few striking examples of first cases in different organizations and the spread throughout these organizations by direct contact:

First—Private K., Provisional Ambulance Company, was in Chicago from the 13th to the 16th of September. Although he gave no definite history of exposure, he claims to have become sick a day or two before he left Chicago with a cough, sore muscles, especially, those of his legs and back, and fever; he felt badly on the train; and a day after he came back to the camp, was sent to the base hospital with a diagnosis of bronchitis. He was admitted to ward 23 on the 18th of September; he had a pulse ranging from 80 to 90; temperature of 102, and a few rales in his chest. This undoubtedly was a case of influenza for the history and clinical progress was exactly the same as those cases which were later on diagnosed influenza. He was probably one of the first cases, having been exposed in Chicago. It was readily seen how he could have exposed the rest of his company and others with whom he came in contact during the day he served as an ambulance driver,—these duties requiring him to go from one infirmary to another in order to get patients. Then again, he must have been a source of infection in the hospital: First, in ward 23 to which he was first sent and then to ward 5 to which he was transferred. He was discharged to duty on the 24th of September. In this way, the Provisional Ambulance was the first organization affected with influenza.

Second, The following was another illustration of contact infection in the Provisional Ambulance Company; thirty men were sent from this camp with ambulance trucks to Chicago. They arrived in Chicago on the 19th of September, and spent the 19th and 20th there. Although they gave no history of contact with any one sick with influenza, Private W., must have contracted the disease in Chicago where the epidemic was at that time raging because he became sick on the train with symptoms that were definitely those of influenza. On September 22, a day after having returned to the camp, he was admitted to the base hospital with a diagnosis

of influenza. Five others in the Provisional Ambulance Company who accompanied Private W., were admitted to the base hospital a few days later.

The duties of these men are such as to bring them into close and direct contact with a large number of sick men from other organizations in the various infirmaries.

Third, Private W., Evacuation Hospital No. 25, had been on duty in ward 5, where undoubtedly he had come in contact with some of the men who were diagnosed bronchitis, but who, most probably, had influenza; he was admitted to the base hospital September 22.

On September 24 and 25, three other cases from the same organization were admitted to the base hospital.

Fourth, Private C., Co. 16, had been in contact with Private W., the ambulance driver above mentioned; he was admitted to the base hospital on September 23 with a diagnosis of observation measles; he had a typical case of influenza. He went to duty September 27.

On the 23rd, 24th and 25th of September, nine cases were admitted to the base hospital for influenza. Many more instances of certain contact infection could be mentioned.

5. Previous Attack.—Only .4 of 1 per cent gave a history of having had previous attacks. One of these described symptoms which were exactly similar to the present attack which he claims to have had over a year ago, and the other four described symptoms which were milder though similar.

6. Chills.—Fifty-one per cent complained during the first day or two of having been chillly or having had definite chills.

7. Vomiting.—In 14 per cent of the cases vomiting was an early symptom.

Ward	Disease	Original Cases	No. of Cases Dev.	% Infl. Dev.	Date Ward Infl. Des.	*First Cases
No. 1	Observation	27	6	22	9/30	
No. 2	Clean Surgery	26	3	11	10/6	
No. 3	Bronchitis	32	12	37	10/5	
No. 4	Pus Surgery	32	2	6	10/6	
No. 5	Medical	24	15	62	10/4	
No. 6	Surgery	37	Nurses 4	11	10/8	
No. 7	Observation	20	4	20	10/3	
No. 8	Pus Surgery	20	12	60	10/9	
No 9	Pneumonia	16	6	38	9/29	
No 1	Clean Surgery	27	1	4	No Change	
No. 11	Empyema	20	0	0	9/28	
No 12	Surgery	37	8	22	Not flu W Down Cases	
No. 13	Pneumonia	35	9	26	10/11	
No. 14	G U.	36	4	11	10/8	
No. 15	Con. Pneumonia	35	0	0	10/10	
No. 16	Surgery				10/9	
No. 17	Stomach	31	12	39	10/3	
No. 18	Surgery	28	0	0	9/30	
No. 19	Stomach				10/2	
No. 20	Closed					
No. 21	Heart Cases	31		25½	10/2	
No. 22	Measles	20	12	60	10/14	
No. 23	Medical	39	28	71..8		
No. 24	Measles	35	14	40		
No. 25	Mumps	31	2	6 .4	9/29	
No. 26	Measles	Closed			10/1	
No. 27	Mumps	Closed				
No. 28	Measles	36	35	97	10/11	
No. 29	Closed				9/27	
No. 30	Gen. Med.	33	2	6	9/29	
No. 31	Closed				9/27	
No. 32	Gen. Med.	Closed				
No 33	T. B.					
No. 34	T. B.	113	23	6	No Change	
No. 35	Closed				9/27	
No. 36	Orthopedic	134	31	23	No Change	
No. 37	Nose and Throat	33	2	6	9/30	
No. 38	Syphilis	54			No Change	
No. 39	Nose and Throat	59	17	28	10/5	
No. 40	Syphilis					
No. 41	Eye	85	6	7	No Change	
No. 42	G. U.	127	7	5	No Change	
No. 43	Nose and Throat	32	6	19	All on 10/39 10/1	
No. 44	G U.					
No. 45	Contagious	30	17	56⅔		
No. 46	Contagious					
No. 47	Psychiatric	22	4	18		

CHART IV

*Discussed in Detail on Page 287

8. Prophylaxis.—Four per cent used some prophylactic measures, such as gargling with Dobell's solution, hydrogen peroxide, glycothymolin or the spraying of the nose and throat with the oil solution.

9. Where Became Sick.—Eleven per cent became sick in the tent, and 89 per cent in the barracks. This is inaccurate because these cases were taken in wards where there were very few negroes.

10. Previous Illness.—Four per cent complained of some previous illness, such as bronchitis of a week or two duration, general fatigue, etc.

11. Cough.—Ninety-three per cent gave a history of having had a cough at one time or another throughout the disease. This was the most constant symptom, the first to appear and the last to disappear.

12. Onset.—Thirty per cent gave a history of a sudden onset—that is, within one day or less; and 70 per cent of gradual onset.

Summary

The clinical analysis of these cases does not justify one in drawing any conclusions except that there were no predisposing causes in this disease. The men affected did not belong to any special group; they were physically fit; their resistance had not been lowered in any way by previous illness nor by overwork nor by inclement weather. The ones who escaped the disease were (1) those inherently immune, (2) isolated from contact, or (3) as in the case of the medical officers and nurses, protected mechanically by the mask.

Analysis of Two Hundred and Ten Cases of Pneumonia Following Influenza

1. Length of Time After Admittance to the Hospital Before Pneumonia was Diagnosed.—One and 6 tenths per cent were diagnosed one day after admittance; 7.8 per cent, two days; 14 per cent, three days; 26 per cent, four days; 14 per cent, five days; 19 per cent, six days; and 17.6 per cent, a week or over. The vast majority of cases were diagnosed between the fourth and sixth days after admittance to the hospital.

2. Onset.—Thirty-seven per cent were sudden and 63 per cent gradual. This shows practically no difference from the onset in the uncomplicated cased of influenza.

3. Length of Time in Quarters Before Sent Hospital.—Fifty-seven per cent were sent to the hospital one day after the first symptoms; 16 per cent, two days; 10.6 per cent, three days; 4 per cent, four days; 4 per cent, five days; and 8.4 per cent, a week or over.

4. Previous Illness.—Twenty-four per cent complained of having had some previous illness before the onset of this disease; 80 per cent of these had had pneumonia before, and 20 per cent had had other forms of lung trouble—such as asthma, chrnoic bronchitis, and "weak lungs."

5. Age.—Sixty-two per cent were between twenty and twenty-five years; thirty-two per cent between twenty-five and thirty, and 6 per cent between thirty and thirty-five.

6. Contact and Contagiousness.*—Forty-three wards were studied in order to obtain information as to the contagiousness of pneumonia proper. The probability of the thermometer carrying infection from one patient to another could probably be discarded because unusual care was taken in the wards in the proper disinfection of thermometers, and a sufficient number were on hand during this epidemic.

The possibility of contagion through carriers such as convalescents, nurses, or orderlies was unlikely because of the wearing of the masks by every one in attendance upon patients.

Of the entire number of wards investigated, there were only four in which the cases were grouped, and in only one ward did these cases develop one after another. It could not be proved that pneumonia was spread by transmission from one ward to another.

There was practically no difference in the incidence of pneumonia between the upper and lower barracks—there being a little higher percentage in the upper barracks.

7. Tent or Barrack.—Seven per cent became sick in the tent, and 93 per cent in the barracks. This is not accurate, because the cases are not representative; 69 per cent in the upper barrack, and 31 per cent in the lower barrack.

8. Rural or Urban.—Sixty-six per cent were from the country, and 34 per cent were from

*This information was obtained from questionnaires sent to ward surgeons.

the city; 23 per cent were from the south, and 77 per cent were from the north.

9. Occupation.—Sixty-four per cent were farmers; 25 per cent were of sedentary occupations, and 11 per cent miscellaneous.

10. Length of Service.—Forty-five per cent a month or less; 19 per cent. two months, and the remaining 36 per cent three months or over.

Summary

Previous illness may have some bearing on the association of pneumonia, following influenza. Of those who contracted pneumonia 24 per cent had had some definite respiratory disease as compared to 5 per cent amongst the cases of uncomplicated influenza. This fact may have had some bearing on the cause of the locus minoris resistantiae.

Medical Officers*

There were one hundred and seventy-three medical officers at the base hospital during the epidemic. One hundred and thirty-five were received during the first week of October. Of these, seventeen, or 5.6 per cent contracted influenza. There was no pneumonia and no deaths.

Age.—Three of the medical officers were over forty. The youngest was twenty-six years.

Contact.—All but three gave definite histories of contact. Captain D, was exposed to influenza for a week before the epidemic was recognized, and was admitted to the base hospital on the 29th of September. He did not wear any masks during that time. The technic of the other two could be questioned.

Conclusions

The influence of such predisposing factors as age, physical condition, exposure to severe weather, previous illness, etc., is the same amongst medical officers as line officers; therefore, why is it that only 5.6 per cent of medical officers contracted the disease as compared to 8.4 per cent of line officers; that no pneumonia occured amongst the medical officers as compared with 7 per cent amongst the line officers, and that no deaths occured amongst the former, and 7 per cent amongst the latter?

By elimination of all other possible reasons, it would seem that the mechanical protection afforded by masks and the technic in the care of contagious diseases must be the only reason for the difference.

*Data obtained from questionnaires sent to Medical Officers.

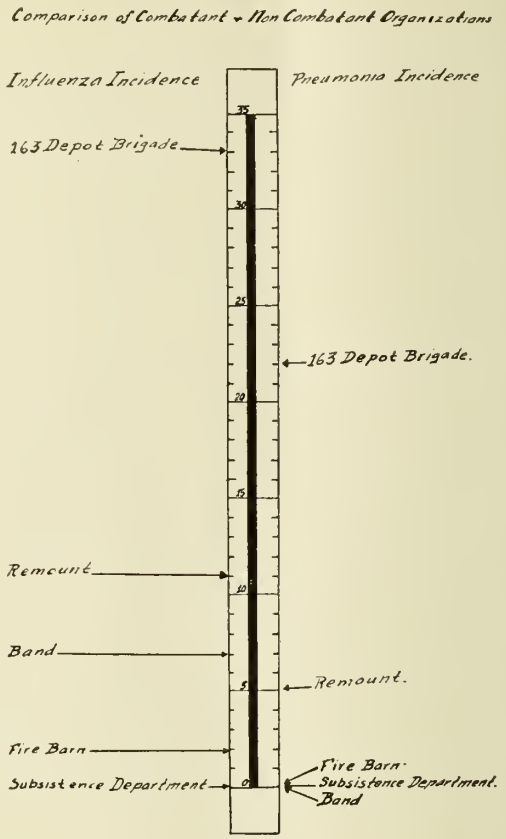

CHART V

Line Organization Officers.*

There were 1,031 non-medical officers in Camp Dodge about the first of October. Of these, eighty-six contracted influenza, or 8.4 per cent; six or 7 per cent developed pneumonia and six, or 7 per cent died.

Thirty-two officers were personally questioned.

1. Previous Attack.—Three gave histories of having had previous attacks which they considered "the grippe," but the symptoms of which were not typically like the present attack.

2. Overwork.—Seven complained of having been tired previous to their admittance to the hospital but had continued to do their work.

3. Contact.—Twenty-four, or 75 per cent gave definite histories of having come in contact with some infected person, e. g., soldiers in their company, fellow officers in

*Data obtained from questionnaires sent to Line Organization Officers.

the mess halls, etc. A large number of these officers administered to the needs of those sick in their company before they were sent to the hospital. None of these officers wore masks nor tried any other means of prophylaxis.

The following histories show examples of individual contact: An enlisted man working in the adjutant's office contracted influenza; Major M., of the same department contracted the disease four days later. There were no other cases in this department.

In the quartermaster's department, Lieut. G., contracted the disease and six days later, his commanding officer who worked with him became sick. Many other instances of definite contact infection could be mentioned.

4. Previous Illness.—None had had any previous illness while in camp.

5. Age.—Two were over thirty-one; all the others were between twenty-one and thirty-one, and 90 per cent were between twenty-two and twenty-six.

6. Rank.—There were fifteen second lieutenants, ten first lieutenants, two captains, and two majors.

Conclusions

Contact plays the only predisposing role. It is impossible to determine what influence age has because the ages of the total number of officers were not obtained.

Influenza Amongst the Nurses of the Base Hospital

Previous to the epidemic, there were about two hundred nurses at Camp Dodge. To meet the needs of the epidemic, four hundred civilian nurses and Red Cross army nurses were received. Altogether during the first week of October, there were six hundred nurses working in the influenza wards. Two hundred and eleven contracted influenza, or 35 per cent; thirty-five contracted pneumonia, or 16 per cent; six died, a mortality of 3 per cent.

1. Masks.—Of the total number of nurses who contracted the disease, there were only 12 per cent who had ever worn masks before in their wards, the other 88 per cent had never had any training in the modern care of contagious diseases and had no understanding of the principles of medical asepsis. A very large number of these nurses (of the 88 per cent) stated that the masks were uncomfortable and admitted that they might have removed them at some time or other while on duty in the wards.

Of the 12 per cent who contracted the disease and whose technic was reliable, 75 per cent had been sick from a week to two weeks before the epidemic began and their symptoms were somewhat doubtful of influenza. Of the entire number, therefore, there were only three per cent who beyond any doubt contracted influenza, against whom the inadequacy of masks could be argued.

2. Overwork.—Ninety (90) per cent of the nurses work between twelve and fourteen hours a day, and of the remaining ten per cent, none worked less than nine hours a day. A large number of nurses complained of being completely fatigued while on duty before they developed signs of influenza.

3. Incubation Period.—The incubation period was quite definitely seen in a number of isolated instances; for example, Nurse B. started to work in an influenza ward on October 5, had not been in contact with any patient before that time, developed signs of influenza on October 7, and was admitted to the Base Hospital the same day. Nurse C., came from civilian life to the Base Hospital on October 6, had not been exposed to influenza before; on October 9, developed signs of influenza, admitted to the Base Hospital the same day.

Of instances of this kind, 85 per cent of the nurses questioned showed an incubation period of two days; 10 per cent of three days, and the remaining 5 per cent between four days to a week. Those giving a history of one day, admitted that they might have been infected outside of the hospital, and, therefore, were discarded.

4. Age.—Forty-seven per cent were between the ages of twenty to twenty-five; 33 per cent were between the ages of twenty-six and thirty; 12 per cent were between the ages of thirty-one to thirty-five; 4 per cent were between the ages of thirty-six to forty; 2 per cent were between the ages of forty-one to forty-eight.

5. Previous Attack.—None had ever had the influenza before.

Conclusions

As compared to other organizations, the nurses suffered a rather low pneumonia and mortality rate although a high incidence of influenza. Considering the predisposing factors of overwork and continouus intimate exposure, it seems remarkable that with the high influenza incidence, there should be such a low pneumonia and death rate. The masks may have afforded a mechanical protection against the inhalation of a maximum number of bacteria.

Relapses

From the first of October until the sixth of November, there were eighty-five cases of so-called relapses, or more accurately readmissions, making an incidence of .8 per cent of the total number admitted to the Base Hospital. All of these cases were studied to see: first, which were relapses and which true infections; second, to see what possible causes there were for these readmissions.

Difference between Reinfection and Relapse. —Of the above number, 23 per cent were discharged from the hospital with no symptoms of influenza, the temperature had been normal for at least three days, and they were sent to their barracks for ten days convalescence. These patients complained of weakness, and in nearly every instance a cough. Within a varying period of time, from three to fifteen days, they complained of suddenly becoming sick with exactly the same symptoms as the first attack. They were considered cases of reinfection; those, however, who, after being discharged from the hospital, became gradually worse with the same symptoms with which they were discharged from the hospital, usually resulting in pneumonia, were called relapses.

Six per cent returned to the hospital upon the same day. They all complained of having undergone some unusual exertion. Several walked too far trying to reach their barracks. One couldn't find his company quarters, and was outside for a very long time on an inclement day, etc. All of this group developed pneumonia. Thirty-one per cent returned within a week; 39 per cent within two weeks; and the remaining 30 per cent three weeks or over. The cases were distributed uniformly, no more than two cases in any one company. Twenty-three per cent of the total number of readmissions were reinfections. Eighty-six per cent of these were readmitted between the first and second weeks. Only 3 per cent of these developed pneumonia and up to the present time none have died (November 7th 1918). There is nothing in the histories of either attack to explain the cause of readmissions. The relapses were characterized by a slower onset—the men gradually became worse after coming to their quarters, the

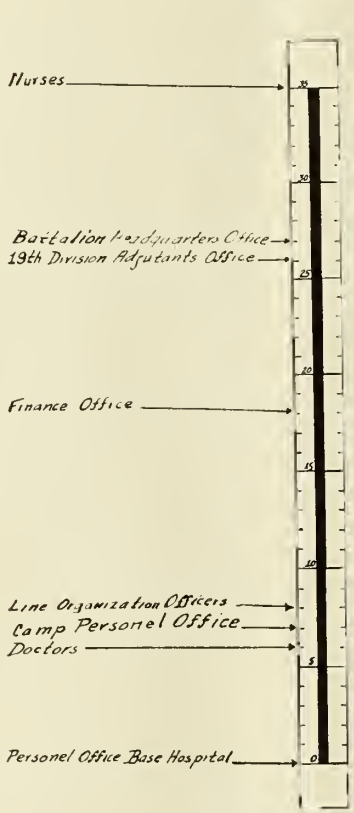

CHART VI

cough, which was a most constant sequel to the disease becoming worse, prostration increasing, and pneumonia in 31 per cent of the cases developing; of these, 11 per cent as compared to 26.6 per cent in earlier primary cases died.

No recurrent cases of pneumonia were discovered, the earlier pneumonias were allowed to convalesce in the hospital.

What was the cause of readmissions? A few complained of having been very weak when discharged from the hospital, several others of having done some work, while at quarters, which they couldn't stand, but

the majority gave no positive history in explanation of any constant causes for their readmissions. The question of immunity in relation with reinfections will be taken up in a later paragraph.

Deaths

Of seven hundred and two deaths from pneumonia and influenza, twenty-six were amongst patients who had been in the base hospital previous to the epidemic on account of some other disease, before contracting influenza. Of these eight had had measles; one, mumps; one, varicocele; four, ear trouble four were genito-urinary cases; five had lobar pneumonia, not following influenza; one, appendicitis; one, infected face, and one had small-pox.

Discussion of Miscellaneous Points of Interest

1. Congestion and Contact.—The Line organizations in a Camp are the most congested —contact is more intimate. There is a striking difference in the incidence of influenza and pneumonia between the Depot Brigade, which is representative of congested groups, and noncombatant organizations, such as the band, fire depots, etc. There is no question but that congestion increases the incidence of influenza and its complications.

2. Masks.—Besides natural immunity, is there any other means of escaping the disease? There is still a difference of opinion as to whether the mask affords adequate, reliable protection. We were unable to study this question scientifically, but a comparison of the masked and unmasked groups show that with the exception of the nurses, the former suffered less influenza and pneumonia than the latter; also the higher incidence amongst the nurses does not disprove the value of the mask because, as has been mentioned in a previous chapter, page 291, 88 per cent of the nurses who contracted the disease did not have a reliable technic. The mask must have some protective value.

3. Immunity and Susceptibility.—Why do about four men out of ten contract the disease and the other six escape it? Is it because of natural immunity, or is it because of artificial protection, such as freedom of exposure, wearing of masks, etc.? In an attempt to answer this question, one hundred men who escaped the disease from various organizations were asked:

(a) Whether they had ever had previous attacks.

(b) Whether they had been in work which isolated them from their company.

(c) Whether they had been away from the camp during the epidemic.

(d) Whether they had worn masks during the epidemic.

The answer of all one hundred men to all four questions was negative. It is logical to conclude that in the case of these one hundred enlisted men, there was a natural immunity.

Regarding the question of immunity, does influenza offer any immunity, and, if so, for how long?

The figures for the three hundred men in the Second infantry, all of whom had what was considered typical influenza on the transport the first week in July, 1918, and of which number only three had a second attack, would lead one to believe that the two diseases were the same, and that immunity held for a period of three months at least. Then, again, on the other hand, the fact that 23 per cent of the total readmissions at the base hospital, were reinfections, seems to contradict the positiveness of immunity.

Could there have been (1) two different organisms for the first and second attacks, (2) were the second attacks a relapse rather than a reinfection?

Pneumonias

The epidemiology of the pneumonia, following our cases of influenza was in many respects different from that of the usual primary lobar pneumonia. The mortality rate of the former was 30 per cent, of the latter 3.6 per cent (of 106 cases from June 1, to September 1, 1918).

Our figures and those of other camps show that—,(1) men from rural districts are more susceptible to pneumonia (lobar) than are urbanites; (2) that the negro is more susceptible than the white man, (three negroes to one white man died of pneumonia from June 1 to September 1, 1918); (3) that the raw soldier falls a victim to pneumonia more easily than the seasoned. These facts were

entirely disproved during the present epidemic of influenza.

1. The percentage of soldiers who had been in the camp only one month, who contracted the disease was in direct ratio to the entire strength of the command, who had been here that length of time.

2. There was 1 per cent more of pneumonias amongst the negroes than amongst the whites in proportion to the total number.

3. There was no greater percentages of pneumonias amongst those coming from the country, (towns of 2,500 or less) than amongst those coming from so-called cities.

The only probable predisposing factor was previous respiratory illness.

Deaths

The relation of previous illness to the development of pneumonia and consequent death, is of interest.

Of twenty-six cases of influenza amongst tuberculosis patients, there was only one case of pneumonia and no deaths.

Of seventy cases of primary lobar pneumonia, nine contracted influenza; five developed pneumonia, all of whom died.

Of thirty-six cases of measles with streptococcic, hemolyticus throats, thirty-five developed influenza, and six of these died of pneumonia.

Four cases of scarlet fever were exposed to a case of influenza which was diagnosed observation scarlet fever, none contracted the disease.

The effect of previous illness upon influenza and its complications bears further study.

Races

D. Race has no influence upon influenza nor pneumonia, following. The incidence of influenza was the same in white and black, and a little lower influenza and death rate occurred for the white than for the black.

Meteorological Report

E. The temperature, humidity, the wind and rain-fall were studied from the 15th of September to the 20th of October. No relation could be determined between these factors and the progress of the epidemic.

Statistics

F. The following statistics govern the epidemic from September 18 to October 25, 1918:

Average strength of command	33,070
Total number influenza cases	10,008
Total pneumonia cases	1,923
Total deaths	702
Per cent of command developing influenza	30.2
Per cent of command developing pneumonia	5.8
Per cent of deaths in camp	2.1
Per cent of influenza developing pneumonia	19.2
Per cent of mortality from pneumonia	36.6
Per cent of colored troops developing influenza	29.3
Per cent of colored, influenza developing pneumonia	20
Per cent of mortality colored, pneumonia	39
Per cent of white troops developing influenza	30.4
Per cent of white troops developing pneumonia	19.1
Per cent of mortality white, pneumonia	36.3

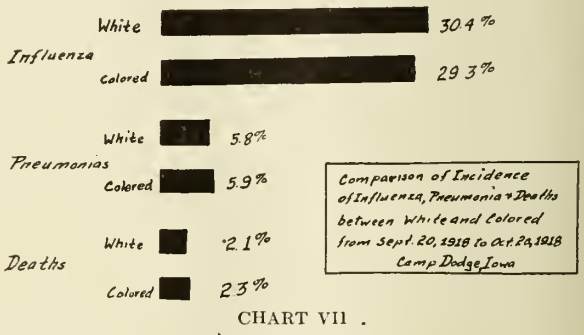

CHART VII .

Second Infantry

G. The Second Infantry had the lowest incidence, the lowest pneumonia rate although a relative high mortality rate. There were 6.6 per cent of influenza cases of these 8.7 per cent developed pneumonia, and of these 50 per cent died.

Of the total strength of command at the beginning of the epidemic, 1,735,800 of these came from Hawaii, leaving on the 29th of June, 1918. At the time of departure, the regimental surgeon noticed that 150 Japanese workmen were lying around the pier, sick, with signs of influenza. On the day after leaving the pier, thirty soldiers became sick with high fever, coryza, cough, prostration and aching body.

Within one week, three hundred had been attacked with what the regimental Surgeon

thinks was typical influenza. There were no cases of pneumonia and no deaths. Of the three hundred who contracted the disease, only three became sick the second time while at Camp Dodge. It is very probable that the cause of the epidemic on board the transport in July was the same as the one at Camp Dodge, but there was no complicating organism causing pneumonia in the former. This fact speaks for an immunity lasting three months, at least.

Fourteenth Infantry

H. The Fourteenth Infantry had been in Alaska and Washington for a period of from two to three years before coming to Camp Dodge. The First Battalion Companies A, B, C, D, came on October 4th from Alaska, the rest of the organization had come before on September 24 and 25th. The men from Alaska had a fearful toll—they being the most severely affected. The entire regiment had a strength of command of 1873. Of these 48.5 per cent contracted influenza; 16.5 per cent of these developed pneumonia, and 43.3 per cent of the pneumonias died. Of Companies A, B, C, and D, with 800 men; 73 per cent had influenza; 38 per cent developed pneumonia, and 53 per cent died. These were men in excellent physical condition, they had undergone no epidemics; they had not been overworked; they were not exposed to a severe climate, and yet they showed less resistance than the physically inferior men of the Development Battalions. The explanation must be made on the theory that they had insufficient antibodies to fight a new and virulent host, such as they never had to overcome while in Alaska.

Conclusions

1. The epidemic of influenza at Camp Dodge began about September 18th and lasted until about October 20th; when about one-third of all soldiers in the camp were affected. From the twentieth of October until the twentieth of November, there had been admitted from 6 to 15 cases of influenza a day.

2. The disease is self-limited, is carried along routes of travel by human contact, appears and disappears by crisis, so to speak.

The author wishes to express his appreciation of the kind encouragement of Major J. G. Maxon, Assistant Division Surgeon, to Major F. Burch and Major E. T. Edgerly, Commanding Officer and Chief of Medical Service of the Base Hospital, to Captain S. H. Jacobs, Camp Epidemiologist, to Major William Dwinell, Chief of the Laboratory Service, Captain J. Carr, Medical Consultant and to Miss Ida Brinton, Secretary to the Secretary of the Iowa Medical Society for typewriting the manuscript.

INDICATION FOR SURGICAL TREATMENT OF THE THYROID GLAND*

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The appearance of hypertrophy, colloid, and adenoma, has been well studied, and of course has determined much of our knowledge of the thyroid. Yet the microscope seldom can give us the clue as to surgical treatment. It would be well if we could remove a section as in breast diagnosis, and base our procedure on the report. Usually the patient needs medical preparatory care. Many times we only dare attempt a ligation. Even if a section were practical the picture is complex, different portions of the gland showing various changes. Further, as has often been stated, the pathology of the thyroid is not to be found in the gland alone. The entire body and all factors of emotion and mind must be considered.

With the medical, or perhaps a better word is indirect treatment, we will consider everything, except the direct attack on the thyroid, thus including removal of infections, necessitating major or minor surgical procedures, correction of environment, rest, suggestion, diet, and drugs. Internists with this broad vision achieve results far beyond what usual medical care yields. The surgeon must consider all these factors if he would secure the greatest benefit for his patient.

How shall we approach the problem of a diseased thyroid? The first rule, eliminating malignancy, abscess and such rare conditions as an occasional fulminating type, is that

*Read before the Clinical Club of St. Paul, September, 1918.

there is no need for immediate haste with the knife. We are not dealing with a pus appendix and there is time for study. Of all the members of the kinetic chain, the thyroid is the most easily observed, the most ocular. It would seem to respond to influence at times, almost like a barometer and may indicate something wrong somewhere else in the body, environment, mode of life, or thought. If this view were always taken at the first symptoms, the causation sought and removed, there would be more frequent return to normal function and less need for surgery. Further in those cases where surgery is indicated, the present success has been attained only by the most careful preparation and selection of time. This means the determination of the ebb and flow of symptoms, if there is relatively at the time a hyper or a hypo of activity and toxicity. If the symptoms are rising, caution is the watch-word. If severe, such procedure as the removal of an abscessed tooth, a tonsil, an emotional shock, or a severe examination, may be more than the patient can stand. Of course, there are indications, for instance a simple cyst or adenoma with well compensated and normally acting heart and kidneys, where almost ordinary surgical preparation will suffice.

One striking feature so often commented on, is the goitrous districts. For instance in the patients presenting at St. Paul, why are the thyroid changes more common in certain parts of Wisconsin than say, North Dakota. Simple goitre is exceedingly prevalent among school children in these districts. One naturally thinks of the water, and it is not only a question of the actual water as such ingested, but all plant and animal life raised and reared in this district make use of the same water supply, and their products in turn are largely ingested in the neighborhood. For instance, every glass of water and every glass of milk may have the same or nearly the same, proportion of presence or lack of whatever substance is adversely affecting the thyroid. If a toxin ,boiling of the drinking water throughout the entire territory as an experiment might yield information. Clinical experience would suggest the adding of iodine in some form to the drink or food in these districts. Chemistry along the lines of Kendall, of Rochester, producing thyroxin may evolve definite plans for these districts of correcting either the water supply or furnishing the diet with the lack of iodine or whatever substances are essential to normal thyroid metabolism. Feeding of thyroid substance effects favorably some simple thyroid cases and those of mental deficiency.

Speaking of simple thyroid in school children leads to the relation between this gland and the other internal secretions, and such vital considerations as puberty, pregnancy, and menopause. At puberty and pregnancy, nature would seem to call for increased thyroid production and to meet this demand the gland physiologically enlarges, after pregnancy it should return to normal and after puberty when nature's normal demand has been established it should not continue to enlarge or should not over-act. At the menopause, we note commonly an atrophy of the gland.

The association of the thyroid and sex is perhaps only one of the phases of the glands function. Regarding another member of the kinetic chain, Crile says, "The excitants of increased metabolism lead to increased thyroid activity; but as we have shown elsewhere, they cause also an increased output of epinephrin. Moreover, the symptoms of exophthalmic goitre are identical with those produced by the combined administration of epinephrin and of thyroid extract, plus those due to the deterioration produced by the disease in certain organs. Among organs thus damaged are the heart, the brain, and the liver. How then, shall we decide which symptoms are due to the suprarenals and which to the thyroid? Epinephrin increased basic metabolism, as is evidenced by increased temperature; it increases the blood pressure, the force and frequency of the heart beat, throws the blood from the inner larger arterial trunk to the periphery; dilates the pupils; producing sweating, and increases respiration. But epinephrin alone does not lower the thresholds of the brain; does not cause nervousness, and does not cause trembling and insomnia. These are caused by thyroid secretion. These two groups of phenomena, together with the modified function of damaged organs, as the liver, heart, and brain, make up the sum total of exophthalmic goitre." It would seem

of the members of the kinetic chain that the suprarenals are not often enough considered and that in some of our failures where we have treated thyroid symptoms, the suprarenal is either an associated or in some cases the chief offender. Crile, has suggested the possibility of future suprarenal surgery in cases of over-activity of that organ.

Pepper, in consideration of other organs of internal secretion, says: "One of the questions which can not fail to come to one's mind in all discussions of the results of treatment of hyperthyroidism by thyroidectomy is that concerning the possible disturbance by the operation of the balance between the other glands of internal secretion. Even though the function of the removed thyroid may have been altered or excessive, yet the activities of other glands may have been adjusted to balance, so far as possible, this condition of affairs, and this balance will be disturbed by the removal of the thyroid. Further it seems proper to question whether surgical removal of the thyroid is ever to be undertaken. In some cases where the hyperthyroidism or goitre is merely part of a pluriglandular process, or even where the hyperthyroidism may actually be an effort at compensation for a deficiency in function of other glands. For example, the pituitary body is said to enlarge after the removal of the thyroid, and an enlarged thymus is considered by some contraindicative for thyroidectomy, for, after operation, such cases frequently get worse, owing, it is believed, to the thymogenic auto-intoxication. Other examples might be quoted, but these are sufficient to suggest that we should be cautious in interpreting the return or alteration of the symptoms after the operative removal of the thyroid.

While as far as I know no activating chemical principle has been isolated in other endocrin glands than the thyroid, yet it would seem probable there is in them also a similar iodine content, doing their share of regulating or governing basal metabolism. Compared with such other endocrin glands as the pituitary, suprarenals, and sexual glands, the thyroid is larger and has a much richer blood supply, that it would seem reasonable to call it the chief regulator or governor of basal metabolism.

The emotions and mental activities of all walks of life at times cause tremendous strain and the thyroid is the most visible measure. This is the phase of relationship with another probable member of the kinetic chain, the brain. I especially remember one young lady whom I had been observing for a pelvic condition for some months, and whom two weeks after a disappointment in a love affair, with no sleep in the interval, had an enlarged thyroid, tender to touch and with definite symptoms. Failure of regularly licensed medical men to recognize fully the power of mind and emotions over the body has resulted in the tremendous growth of Christian Science, and it is a sad commentary that these people and other cults at times achieve cures. Medical men must more frequently recognize and emphasize this mental phase in order to prevent the increasing influence of dishonest and honestly misguided theories.

Let us turn to etiologic considerations of infections. With the acute fevers the thyroid may become inflamed, at times with pus formation. A painful swelling of the thyroid has been especially observed in acute articular rheumatism, typhoid fever, measles, and scarlatina, and given the name of "the thyroid sign" by Vincent. It would seem an indication of hyperfunction called forth by the necessity of resisting the infection. While these infections and toxins come from anywhere in the body, yet we think especially of those of the head. In this country, Billings headed the clinical workers and Rosenow's work at the Presbyterian Hospital and now at Rochester, has lead the laboratory investigation. Buford, in discussing surgery of children remarked on the improvement in thyroids of very young children appearing in dispensary, by the removal of tonsils. It seems reasonable that the types of streptococci that affect the heart, kidneys, and which we know are associated with rheumatic infections should also influence the thyroid. The teeth, tonsils, and upper respiratory tract, have a close anatomic and direct lymph channel connection with the thyroid. Embryologically the thyroid arises in close contact with the glands into which drain infection of the head. Personally we aim a very thorough search for focal infections of the head in treating thyroid

and in many instances definite improvement results from such attack.

In the thyroid, as elsewhere, from an infective standpoint, tuberculosis is being emphasizeed. The literature gives the French first mention. Roger and Garnier studied the production of thyroid disease experimentally by the injection of tubercular emulsion. They also called attention to sclerosis of the thyroid which they regarded as due to toxins, not to the bacteria themselves. In the same year, Torri also found the connective tissue of the thyroid in tubercular patients, sometimes sclerotic, sometimes myxdematous. He also injected tubercular bacilli into dogs, carotid vessels, and produced thyroiditis with tubercle formation; he also found hypersecretion of colloid in which poorly stained bacilli and remnants of bacilli could be found soon after injection. For this reason and because bacilli do not grow on thyroid extract he attributes a bactericidal action to colloid, and thus indirectly confirms Morin's findings. Roger and Garnier hold that the toxins that produce these effects reach the gland through the circulation, but Torri thinks they are endotoxins set free by the destruction of the bacteria in the colloid.

Poncet and Leriche believed that tuberculosis of the thyroid is rare, but that nothing is commoner than thyroid disease due to inflammatory tuberculosis. Also that tuberculosis may produce various thyroid disturbances which may be purely functional or anatomical. The functional disturbances may be deficit or excess of secretion, the anatomical may be atrophy or hypertrophy. It is probable that inflammatory tuberculosis produces many of the symptoms of hypothyroidism such as obesity, certain trophic skin diseases, and certain periphery circulatory troubles, such as cyanosis. They think it probable that one of the results of tubercular hypothyroidism is the condition known as thyroid rheumatism. Next to sclerosis they say, the most common thyroid lesion in tuberculosis is adenoma. Continued irritation by tubercular toxins leads to hyperplasia of the gland. They conclude, after quoting, the work of many investigators, that tuberculosis is the cause of a great many of thyroid disturbances, either of deficit or excess and in many cases these may be regarded as signs of tubercular intoxication.

In some cases if the thyroid is enlarged or overactive to fight the poison of tuberculosis, a clue to treatment would seem to be through attacking the poison rather than the engine that is trying to put the cause out. This was illustrated in two parallel cases of mine. Both were of the same age, both ran about the same slight elevation of temperature rather slow pulse, both had had pleurisy. There was no positive sputum at time of examination and observation, but X-ray examination and physical findings were positive for tuberculosis of the lungs. In the one because of pressure symptoms, and my only excuse is because it was some years ago, I operated, removing most of the gland. One year later the patient was dead of pulmonary tuberculosis. She had temporarily felt better from relief of pressure symptoms, but had lost the agent that was helping to fight the infection. The other case, I have watched for a period of five years. She was given thyroid gland and more or less has been on this since. The goitre is slightly smaller, is less tender, there is less pressure, and yet she has since borne her fourth child, which is strain enough for a tubercular type, and has had to work as hard as ever. If the first case, the one operated, had been fed thyroid after the operation the final outcome might have been different. Two cases never prove anything, they are simply quoted as typical of a considerable observation. A search of literature reveals such a large number of careful observers to be of this opinion as to make one feel that relationship at times between tuberculosis and thyroid is quite plausible.

It is at times a difficult problem to differentiate whether a patient should be treated for tuberculosis, whether the goitre is for the time being primary and probably surgical or whether the nervous system is the factor. Such cases are not the type illustrated before with slow pulse and definite history and findings, but they have temperature, rapid pulse, physical chest findings, suggestive, but not positive. At times they have high blood pressure and one cannot help thinking of the suprarenals or of course kidney disease. The picture is not clearly one of hyperthyroidism

or thyrotoxic disturbance, nor one of definite tuberculosis nor of hysteria.

I am aware that in thus emphasizing tuberculosis I have followed the pendulum of medical opinion. There are those who believe too many conditions are called incipient tuberculosis, tuberculosis of a larval type, etc. These would rather employ such terms as diathesis, neurasthenia. They scoff at calling these border-line cases all tubercular. It may be that in our anxiety to diagnose early tuberculosis we have erred in thinking it the dominant note of the clinical picture presenting, whereas, some term of the nervous system would closer describe the chief factor of the symptom complex. But from the practical stand-point tuberculosis visualizes to the average patient and physician, the regime medical men would usually prescribe for these cases, namely; rest and general constitutional upbuilding with proper mental suggestion.

Syphilis as a causative factor has not been so closely studied. But from the similarity between tuberculosis and syphilis microscopically, with the same sequence of ulcer, glandular stage, and teritiary changes, with the literature interested in the value of K. I. and Hg. in tuberculosis showing similarity of benefits as in syphilis, it would seem that specific examination should never be neglected in connection with the thyroid. Syphilis often affects the voice and before operating on a thyroid for voice affection, a thorough laboratory examination should be made and the therapeutic test applied.

This question of differential diagnosis reminds one that it is not long since a goitre was commonly diagnosed only in the presence of such symptoms as marked enlargement of the gland, exophthalmos, extreme heart symptoms or perhaps tremor. One realizes today how small a factor exophthalmos is and that some of our most vicious goitres may give little external evidence on the neck. Nervousness, sweating, tachycardia, at once call our attention to the need of eliminating the thyroid as a factor. Increased pressure pulse is taken as readily now a hint to investigate the thyroid as aortic syphlitic involvement.

A basal metabolic laboratory bids fair to be a necessary adjunct to one doing thyroid work. Dr. Plummer at Rochester has a laboratory so much greater and a collection of observations so much larger than any one else that we are awaiting more definite published statements on its value. Dr. C. H. Mayo at the last American Medical Association meeting expressed his opinion of the great importance of metabolic studies.

Means and Aub following the lead of Du Bois and others who made a study of exophthalmic goitre from the point of the basal metabolism, came to these conclusions:

1. The general metabolism shows a characteristic increased in hyperthyroidism.

2. This rise may be used as a functional test of the thyroid activity or as an index of the intensity of the thyroid intoxication.

3. An extended study of the metabolism in various types of toxic goitre show that:

(a) Rest alone causes a marked decrease in toxicity.

(b) Drugs in addition to rest do not materially accelerate this decrease.

(c) The Roentgen ray, is some cases, produces a definite improvement, while in others it seems to be quite without effect.

(d) The usually immediate effect of surgery is a marked decrease in toxicity, but there is a very definite tendency toward a subsequent recurrence.

4. The lesson in therapeutics to be drawn from these results we believe to be about as follows:

(a) Complete rest in bed plus irradiation should be continued until the metabolism reaches a level.

(b) If rest and the Roentgen ray fail to restore the metabolism to within 20% of the normal, it is proper to resort to surgery, unless there is some definite contraindication. Among contraindications arising metabolism, in spite of complete rest, seems to be very important.

(c) Following operation, if the metabolism again increases, further active treatment should be carried out. The observation in the cases that we have followed for a long time emphasize the importance of keeping cases of exophthalmic goitre under observation for months rather than weeks, preferably years rather than months.

I can appreciate the claims to good results by competent internists who insist on a minute study and careful regime. I can understand the failures surgically when one narrowly considers the thyroid alone and fails to take cognizance of the etiologic factors. However, this is no brief for medical men who insist on treating all thyroids.

Surgeons who constantly keep in mind the adolescent and soft type goitres, consider all etiologic factors, seek a careful differential diagnosis, do the stage operation, reckon amongst their operated patients none more grateful than their thyroid patients. Such conditions as simple cysts and adenomas markedly outlined, resolve themselves into a question of pressure or mental attitude of the patient. The rare cases of abscess, carcinoma, and the fulminating type of thyroidism, subject themselves to the usual surgical indications. Where the over-activity of the gland or the toxic elimination from its pathology is great even if there were some method of wearing it out, the damage by that time to the rest of the body will be irreparable. In these cases given the selection of the proper time as to ebb and flow, and the proper preparation, surgical interference is as much indicated as in an acute ruptured appendix. One cannot help but think of natures response in the form of peritonitis being an effort to attack the cause, but the strength of her response is at times so great that it itself becomes an evil, and Crile points the need of restraining this over-aggressiveness by morphine and other measures. So with the thyroid it may be that nature in order to combat an evil sets in motion an overactivity that gets beyond its control and return to normal function before irreparable harm to the body is done is impossible without the aid of the knife. As regards secondary changes resulting in abnormal thyroids that produce toxines, even if part of the gland could be made to return to normal function there are parts where the changes have progressed so that they have become an entity in themselves as a toxic factor and only mechanical interference will stop the poisoning of the body.

Conclusions

Before directly attacking the thyroid and accepting for the immediate and simple indications it should be considered a barometer, that there is something wrong elsewhere in the body, mode of life, or thought, or diet, and a most thorough search for etiology made.

Scientific investigation along the lines of basal metabolism and the chemistry of the thyroid offers our greatest hope for new advance in diagnosis and treatment.

Surgery has proven itself very valuable in approximating health. The disease of the gland becomes an entity that must be considered in addition to the method of indirect attack.

The stage method of operation, proper preliminary preparations, and satisfactory technique, have become fundamental.

REFERENCES

1. Edward C. Kendall—Endocrinology, Volume 2, pages 81-93.
2. George W. Crile—Journal A. M. A., August 25th, 1917.
3. O. H. Perry—Pepper Progressive Medicine, Volume XXI No. 2.
4. Roger and Garnier—Arch. Gen. De. Med. 1900, el. XXXV.
5. Torri-Lezione—Chir. 1900, age 45.
6. Poncet and Leriche—LaClerique, Paris, 1910, Volume 613-616.
7. Plummer—Trans. American Assn. Phys., 1915, Volume XXX-450-457.
8. C. H. Mayo—Journal A. M. A., August 31, 1918.
9. J. H. Means and J. C.—Aub-Journal A. M. A., July 7th, 1917.

PLANT DERMATITIS*

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Almost every physician is more or less familiar with the condition commonly known as ivy poison, or dermatitis venenata.

The diagnosis is usually easy, and the history of the case lends confirmation, for the symptoms appear from one to eight days after exposure, which is usually traced to a visit in the country.

There are other plants which may produce severe dermatitis, in which case the etiology may not be so clear, and a correct diagnosis is more or less puzzling.

*Read before the Minnesota State Medical Association, August 29, 1918.

My attention having been called to a very severe case of dermatitis brought about by the application of tincture of arnica led to a review of the literature on plant dermatitis.

In the first place it may be stated that certain individuals possess an idiosyncrasy, or hypersusceptibility, toward certain drugs, and it is natural to assume that a great many plants may produce a dermatitis in those cases where a hypersusceptability exists.

While the literature shows many instances where this is true, I wish to speak especially of those cases where it is not uncommon.

Farquharson[1] in 1879 mentions arnica as a drug which occasionally produces an "erysipelatoid inflammation." He describes a case of an old woman who had applied diluted tincture of arnica to a sprained arm, which caused an inflammation at the point of application which slowly spread over the whole body causing much irritation, discomfort and depression.

Davidson[2] during the same year reports a case where diluted tincture of arnica was applied to a bruise on the arm. The result was "erysipelas" of the arm, shoulder, neck and thorax of the same side, and in consequence he was confined to bed for three weeks.

Five years later the same individual applied diluted tincture of arnica to a wasp sting on the wrist. Two days following, the arm was swollen, red and sore, with enlargement of the axillary glands. The patient was confined to his bed for ten days on this occasion.

Seven years later the same patient again applied tincture of arnica to an injury to the knee. The second night after applying, the leg was swollen and red to the middle of Scarpa's triangle. There was a rise in body temperature and lymphatic enlargement.

The "erysipelas" was succeeded by abscesses over the thoracic and abdominal walls and gluteal region. A son of the patient has the same idiosyncrasy as the father for tincture of arnica, while the rest of the family can use it with perfect impunity.

Proctor-Sims[3] reports a case of arnica dermatitis which was of an extremely irritable and erythematous character which subsided in a few days.

The plant which appears of the most interest is the primrose (primula obconica) which is commonly grown in the green houses and sold as a house plant.

Attention was first called to this plant as being responsible for a dermatitis by J. O. White[4] who exhibited the primula before the Boston Society for Medical Improvement at a meeting in 1890.

The plant was introduced from China to European florists in 1882. One of the florists instrumental in its propagation suffered from an artificial dermatitis upon the hands and face which was of an eczematous type. A recurrence of the condition the following year at the propagating season, and other employes at the greenhouse being afflicted in the same manner, made the cause quite clear.

It appears that the author had previously reported in an agricultural magazine the possibility of a dermatitis resulting from the handling of this plant, but no response came until the following year.

He describes the dermatitis as running from an erythematous up to the vesicular form, lasting a short time and states that many cases of eczema may possibly be due to the action of this plant.

Kirk[5] reports a case of primula dermatitis associated with myxodema in which the mucous membrane of the mouth was involved.

The patient responded to treatment for myxodema but there was recurrence of the dermatitis. The diagnosis was later made by a florist who was furnishing plants to the patient. The patient recalled having chewed some of the flowers, which accounted for the severe inflammation and swelling of the mouth and tongue.

Foerster[6] points out the frequency of a severe degree of dermatitis due to coming into immediate contact with the primula. He mentions the fact that the dermatitis is not ordinarily recognized by the medical profession, and classifies the dermatitis into three types depending upon the degree of idiosyncrasy.

Sweet[7] reports a case where a woman gave a history of suffering from a most obstinate dermatitis for three years with occasional exacerbations and remissions. The cause was found to be due to a plant, primula obconica,

in the window at her home, which was banished, with the result of no further recurrence.

Zeisler[8] reports having cared for at least 25 cases of primula dermatitis affecting mainly the hands and face.

He states that many patients are treated by the family physician, and even dermatologists, for supposed eczema and at times for recurring attacks of mild erysipelas.

Brown[9] reports a case where the patient died from pneumonia due to an infection following a dermatitis of the nose caused by smelling primula obconica.

He also reports having treated two other cases of primula poisoning, one of which died.

Simpson[10] attempted to isolate the active constituent and determine its relation to anaphylaxis. He found a crystalline body which he claims is a glucoside, an oleoresin and a dark powder which he thinks is an acid. The glucoside and acid were active but they differed in their action.

Experiments performed to determine whether the skin irritability was due to the plant protein sensitization were absolutely negative. This was determined by inoculating a concentrated protein extract into susceptible patients, in all cases there being no reaction.

He concludes that since the skin irritability is not due to protein sensitization, it bears no relation to anaphylaxis.

Since I became interested in the subject of plant dermatitis I have made inquiry among the florists concerning the frequency of poisoning by the obconica and find as a rule they are aware of the irritation produced by this plant.

In conclusion I trust this review may be of some value in bringing to your attention the possibility of certain obscure cases of dermatitis being of plant origin.

BIBLIOGRAPHY

1. Brit. Med. Jour. Vol. 1, 1879. 223.
2. Brit. Med. Jour. Vol. 1, 1879. 625.
3. Brit. Med. Jour. Vol. 2, 1912. 1707.
4. Boston Med. & Surg. Jour. cxxii. 425. (1890).
5. The Lancet, Vol. I, 1899, p. 579, 1630.
6. J. A. M. A., LV. 642. 1910.
7. J. A. M. A., XLIX. 329. 1907.
8. J. A. M. A., LVIII. 2024. 1912.
9. The Lancet. Vol. I. 1906. 861.
10. J. A. M. A., LXIX. 95. 1917.

DISCUSSION

DR. H. W. HILL: (Discussing the paper of Dr. Brown): I have been very particularly interested in this whole subject, having seen a number of instances where different foods, taken perhaps with impunity for many years have suddenly become capable of bringing out a rash or something of that kind, on the person who was taking them. One of our colonels, a big husky man, who has been in France, and who was on the point of returning, developed a most irritating rash upon his body. By elimination, getting him to leave off one food after another, we finally found that it was strawberry jam, which he had eaten all his life, but which had just taken a bad turn against him; and he was getting some anaphylactic reaction. Similar conditions are well known with regard to almost all the ordinary foods. A very ingenious method of determining which particular food is involved is by simply taking extracts of the different foods, putting a little drop of each on the skin and puncturing through the drop with a needle, furl into the epidermus. Redness and swelling, like a tuberculin reaction indicate that you have found the particular food which may be at fault. Of course, the same information can be arrived at by eliminating one food after another, from the diet, but that is a very slow process.

DR. J. C. BOEHM, St. Cloud. (Discussing the paper of Dr. Brown): Mr. President and Members: I am very glad the doctor brought this paper before us. I have a very interesting case to report, in fact, two of them. My own wife went out early in the morning one day a good many years ago to pick lady slippers, cypripediums. She drove her own horse, and she had a young lady with her. She had on kid gloves. She picked the flowers, brought them home into the house and put them into a vase. About a week later she began to have so-called ivy poison symptoms, with the result that her ear swelled up to an astonishing degree, the eyes were completely closed and it ended with the formation of vesicles. She suffered terrifically for six weeks. I tried everything. I had Dr. Vanderhork from Minneapolis, and several others, but she obtained no relief until I painted her face with ichthyol and collodion. That formed a kind of a crust, and she got more relief from that than anything else. I was told by some of the older doctors that she would have this every year now from this attack. I could not quite believe that. I hid those gloves. About Christmas time I laid them out. She was pleased to find them, and she went out and wore those gloves; and naturally, she rubbed her nose. When she got home she told me she was feeling just like she did when she had that ivy poisoning. I let it go so that I could see it myself, and then applied the ichthyol and it disappeared. I again hid the gloves, and repeated that same process in March, and with the same result.

It was on the 4th of July, in the morning, that my wife drove out to get the flowers, and a week after that her friend who had been with her, went away. She stayed just a week. And when she went away, they had to wait for the train, and she told me that her face itched, and that evening we could see the rash.

A year after that I had a lady come in with, I don't know just what kind of poisoning it was. She was out in the woods, and she was poisoned all over the body. I told her to let me have the skirt, and that would I not charge her anything for the treatment. She first bathed with a solution of peroxide of hydrogen, bathed her whole body with it, and then put on the ichthyol in as many places and she could, where the irritation was most prominent. She got well, and I kept the skirt. In the winter I gave her that skirt and told her to wear it and stay in town over night. The next morning she had a nice dermatitis the same as she had in the summer.

As far as the strawberry jam rash is concerned, I was operated upon at the City Hospital in St. Paul. I had been an Interne there years before, and I was very well acquainted with the housekeeper. and the one who handled the orders for food and so on. She found out that I was fond of strawberries, so she sent in a dish for me to eat, and I ate them, of course. The next morning, though, the nurse took one glance at me;—I did not know what was the matter with me. But she rushed out, and the superintendent of nurses came in and looked at me and she also went away. They were horrified, and it was not long after that that Dr. Rogers came, and he said, "You have been eating strawberries, haven't you?"

DR. HILL: Had you ever been affected in that way before?

DR. BOEHM: No, nor since. I had the rash all over, and in 24 hours I began to itch; and since then I cannot wear wool next to my skin.

DR. J. T. CHRISTISON. (Further discussing the paper of Dr. Brown): I would like to be permitted to say a word in this connection. I was very much interested in Prof. Brown's resume of this subject, because I have had an experience very much like the one he recounted, only the patient was my own sister, and I, like he, was informed by some of the older physicians, that this accursed thing would return every year for at least three years. It did not, however, because we used some precautions which prevented it. But I do wish to report a case which had a very distinct bearing upon the subject.

Some years ago a very dear friend of mine with his wife, went into the woods and picked flowers. A little later he began to show symptoms of what we supposed was ivy poisoning. Dr. Cameron was called to take care of him, and in spite of everything that we could do, this man died. After three or four days the body was entirely covered with this eruption, going on from a simple dermatitis to the formation of blebs. The kidneys gave way under the strain, and I assume that the man died of a nephritis. But the point I wish to bring out is the fact that this particular gentleman had an accident policy which the insurance company refused to pay on the ground that his was not an accidental death. The case was taken into the United States Circuit Court, Dr. Cameron and myself appearing as witnesses, with the result that the policy was paid, and the precedent established in the courts of Minnesota at least, that death from dermatitis following poisoning by plants was an accidental death.

This brings to mind some extremely interesting things, not altogether germane to this particular subject, but in a general way as showing the susceptibility of individuals to particular types of drugs.

I was called out of bed the other morning at 2:00 o'clock, to see a child that was said to be suffering from some peculiar form of delirium, and found a little child acting like a raving maniac. She had during the late afternoon paid a visit with her mother to one of our oculists. He had prescribed for this child a solution of one-half of one per cent of scopolamine. The mother had used one drop of that solution in each of the child's eyes, that is all, just one drop of a one-half of one per cent solution; and if the father had not grasped the child at one particular moment while I was watching her, she would have dived head first out of a second story window.

I saw just a short time ago a child with whooping cough, with one of our physicians in St. Paul. The doctor was trying to make a diagnosis of scarlet fever. There was no evidence whatsoever of the preliminary symptoms of onset, insofar as scarlet fever was concerned. There was no vomiting, no temperature, no sore throat; and for a moment I was quite nonplussed. It did not look altogether like scarlet fever; and then something suggested to me to ask this question: "Have you given this child belladonna?" "Oh, yes," they said, "that is what we have used for the whooping cough." Here was a child that in addition to her other symptoms had delirium,—this one had also delirium—and had a typical scarletinal rash; and that recalls to my mind that some years ago I had an opportunity of reading some homeopathic literature; and if any of you have ever read "The Provings of Belladonna you will remember a line that runs something like this: "Strikes, fights, bites and wants to jump out of window"; and then in large print, "BELLADONNA." Those are the indications.

Question: Do any of these patients have any temperature?

Answer: No.

DR. ROBERTS: I would like to ask Dr. Boehm, in view of the fact that some of these cases undoubtedly can be explained by anaphylaxis, we know that the remedy for these conditions is to make a vaccine from the offending plant or source; and I would like to ask if he could make a vaccine from that skirt? (Laughter).

DR. HILL: I would like to ask Dr. Boehm and also Dr. Christison: Dr. Boehm said that about a week elapsed between the exposure and the appearance of the symptoms. Can you fix it any closer than that, Doctor? Was it just a week or was it ten days? The point being that the eruption following after the toxic poisoning very often occurs within a certain definite period. Dr. Christison said a short time after exposure. Could you remember how long the time was, Doctor?

DR. CHRISTISON: In the case of my own sister, it was approximately one week. The exposure was on Saturday and on the following Thursday night she first developed symptoms. In the case of the gentleman who ultimately died, the first exposure was on Sunday and the development of the symptoms was on the following Friday.

DR. HILL: It is a little shorter than the usual period, which averages something like 8 or 9 days, when the rash develops.

DR. AUTEN PINE, St. Paul. (Discussing the paper of Dr. Brown): I have had quite a little experience with ivy poisoning and I have found that a strong solution of sulphate of iron, used for liberally bathing the affected parts, is very good.

DR. L. F. SUTTON, Wabasha, Minn. (Discussing the paper of Dr Brown.): There was a great deal of dermatitis following the beginning of the use of barley bread. After a few months time people became accustomed to it, and it subsided. When they first started to use the bread substitutes, with much barley flour, there was much dermatitis resulted. Perhaps they did not make their bread right. It seems to pass away. I would like to ask whether any other physicians have had any experiences of that kind.

Various Members: Yes.

DR. SUTTON: (Continuing). I will have to acknowledge my own inefficiency in another case, that of a lady who had gone to pick flowers and who came back in a few days time with a rash, gradually spreading over her body. I immediately suspected ivy poisoning. I treated her for that, but it did no good. I treated her then on the assumption of an acid intoxication, and gave her bicarbonate of soda, and it cleared up immediately.

DR. G. J. SCHOTTLER, Dexter, Minn. (Discussing the paper of Dr. Brown): I would like to ask if any of these cases which have had ivy poisoning were more susceptible after the first attack.

I had a severe attack of ivy poisoning contracted while I was moving an old fence, which had ivy on it. I began to itch on the fourth day of the work and on the eighth I was covered entirely. I was disabled for ten days. Since that time, if I go near the ivy plant, or any object on which there is ivy, I begin to itch. I have to be very careful. I wish to ask the gentleman if they have found that same thing in other patients?

VARIOUS MEMBERS: Yes.

PROF. E. D. BROWN, Minneapolis. (Closing the discussion): I did not know this paper would create so much discussion. I do not know the names of all the men who have taken part in it, so I will simply try to answer some of the questions.

In the first place, I think it is well established from these case reports, that the incubation period is from one to eight days. The average time is about four and a half days.

So far as anaphylaxis is concerned, there has been only one piece of work done in that line, so far as I know, and that was by the last author quoted. That problem was what I had in mind when I took up a review of the literature. The work done by Simpson has proved quite conclusively that it is not an anaphylaxis from the fact that he made a protein extract from this plant, and tried it on a number of patients who were quite highly susceptible without effect. So his conclusions were that it was not a true anaphylaxis, due to a protein intoxication.

We know that we have many drugs, not of protein nature, which produce skin reactions, when either applied to the body or taken internally.

Dr. Sollman, who has recently made a report in the Journal of Pharmacology and Experimental Therapeutics, has pointed out many drugs which produce skin reactions and it is surprising, the number that will give these reactions.

The plant dermatitis is the part in which I am particularly interested because I have a son who was affected in the same way as was the doctor's wife, except that in his case it came from the pussy-willow. He had it a year ago when out gathering pussy-willows; he had this severe eruption on the ears and about the eyes. It started up as an erythema, and then developed into a vesicle. Again this spring he got the same infection. Next year I shall follow it up closely and try to establish whether that is really the cause of it.

I have only mentioned these two drugs particularly, because I thought you were more or less familiar with them; but when we review the literature we find there are many. The moccasin flower, or lady slipper, is one of them. Even the bitter orange peel is reported as one of the plants which will produce this dermatitis. Also certain kinds of wood. I believe I have covered everything mentioned in the discussion.

I might add that they have tried to establish an immunity toward ivy poisoning. This was done by Ford, who claimed to have rendered animals immune to ivy poisoning but no other person has been able to repeat his work, and it is rather doubtful whether he really did establish an immunity.

So far as we know, those people who are once poisoned by ivy are very susceptible. The first man who worked on the principle responsible for ivy dermatitis was Maisch, who was one of our leading botanists and a professor of materia medica. He believed that it was due to a volatile poison, from the fact that people became poisoned by it although not coming in direct contact with it. Later, Pfaff isolated from the plant a fixed oil which was called toxicodenrol. It was hard to explain how this could be conveyed to an individual who did not come into intimate contact with the plant. He assumed that this might be carried on the pollen or dust. However, he established the fact that a very, very small amount—I hesitate to name it now,—but a very minute amount of this oil, was effective.

Since that work a more recent investigator has claimed to have isolated an acid resin, which he claims is really the toxic principle in the rhus toxicodendron.

THE INTERRELATION BETWEEN ORTHODONTIC MALFORMATIONS AND DISEASES OF THE NOSE AND THROAT*

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That malformations of the dental arches and the maxillae are a great etiologic factor in producing many nose and throat affections may be realized by a review of the closely correlated anatomy of the bones forming the face.

To better understand this orthodontic interrelationship a brief embryological survey is necessary. The evolution of the face depends largely upon the parts concerned in the formation of the mouth and nose. The first step in the differentiation of the face is the formation of the oral plate which makes its appearance on the twelfth day, later this becomes the mouth. At the third week the first and second visceral arches appear, the first arch divides into the mandibular arch and the maxillary process, the second arch springs from the mandibular arch; as these processes grow toward the median line the maxillary process becomes the upper jaw and the mandibular process the lower jaw. At the second month a groove makes its appearance on the frontal protuberance and on each side of this there is formed two nasal processes, the outer pair becomes the outer wall of the nose and the inner pair the septum, as these processes grow downward the union of the two upper portions of the mandibular arch forms the floor of the nose.

By the second month of intrauterine life the septum becomes cartilagenous and by the third month ossification begins in the vomer, into the groove of the vomer the perpendicular plate of the ethmoid fits anteriorly, the rostrum of the sphenoid unites above and the nasal crest of the superior maxillary and palate bones unite below.

At birth the ethmoid part which goes to make up the nasal space is higher than the maxillary portion but it becomes of equal dimensions with age, this increase is due to the descent of the hard palate. As the teeth erupt the nares develops, the superior maxillae enlarges and the Antrum of Highmore forms, gradually increasing in size; with enlargement of the nasal chambers and formation of the alveolar process development is completed.

It will be noted that the septum is the last of the facial bones to ossify, the fact that ossification begins posteriorly explains the rarity of deformities in this part of the bone.

Thus the nasal chamber depends wholely upon the proper growth of these processes and the adjoining parts and any pathologic condition or malformation tends to affect either by extension or anatomical conformation the sinuses or orbital cavities with subsequent effect upon the ears interrelated as they are with these parts.

In the examination of the nares a deflected septum will be noted, but often if the oral vault is examined it will be found highly arched and the alveolar processes close together.

I have often noted that when doing the submucous operation for deflected septum where the maxillary ridge is thickened and broad there is usually associated with the condition a high arched vault and it must be further remarked that these are the most difficult bony ridges to remove, considerable hemorrhage takes place and when a chisel is used it may be broken in the attempt to level the ridge.

A high arched vault with narrow alveolar processes must tend to so crowd the turbinate bodies and septum together that the respiratory space within the nose becomes greatly decreased which in turn causes mouth breathing and its subsequent results—dry pharynx, enlarged tonsils, adenoids and fetid breath.

It is stated that tonsils and adenoids are the most common cause for mouth breathing in the young, but is it not possible, because of anatomical nasal defects that the enlargement of these tissues might be due to an increased hyperamia mainly as a result of the orthodontic anomaly? What effect treatment of the dental arches has upon the nasal spaces and septum can be appreciated by the joint observation of orthodontist and rhinologist of these cases.

Trendelenberg states that a persistent high arch of the hard palate is the cause of a deflected septum. Ballenger concluded that it

*Read at Joint Meeting of Ramsey County Medical Society and Ramsey County Dental Society, Sept. 30, 1918.

is due to incoordination in the development of the bones of the face, this is a fair conclusion when it is realized that the most important area within the nose and known as the viscuous area is but one inch in diameter and any obstruction to this region might cause an infection of the nasal sinuses and because of their close anatomical relationship would produce an intrusion upon or actual rupture into the orbital cavity, although more often monocular both eyes may be affected.

Ocular complications are more frequent in chronic than acute sinus infections, perhaps the most misleading ocular complaint resulting from sinus involvement is asthenopia or an inability to use the eyes for near work for any length of time.

As the sinuses under normal conditions are designed to contain air any secretion of whatsoever nature remaining for any length of time is pathologic and the importance of early and free drainage should be recognized.

The throat is primarily affected by attempting to clear it of the increased secretion and mucous, dropping from the posterior nares.

From a neurologic view directly as a result of nasal obstruction or malformation the trigemius that great sensory nerve of the head with its vast number of distributing branches may be directly affected through reflex conditions.

How best to treat these conditions. In children the tonsils and adenoids if enlarged should be removed at an early date any malformation of the alveolar arches or teeth should be taken care of by the orthodontist, the proper time is during the development of the bony structures and the teeth, since this period extends over several years the greatest importance should be placed on proper occlusion best obtained and constructed at this stage in life.

It can not be advisable to perform a submucous resection of the septum too early in life or remove enlarged turbinate bodies; it is surprising how rapidly the turbinate bodies will shrink down to normal after removal of the tonsils and adenoids.

With adults who have gone through life with high arched palate and contracted dental arches, treatment is still a matter for discussion. L. W. Dean in the Journal of the American Medical Association Nov. 26, 1910, reports a case in which nasal breathing was impossible but by widening of the palatal arch the patient became a nasal breather; as regards the narrow chambers with deflected septum, enlarged turbinates or polypi secondary to sinus infection I believe it has been definitely settled that these conditions should be corrected by operation. Perhaps no operation produces such striking results as the submucous operation for the correction of septal deformities where there has been a narrowed nasal chamber with sinus infection and improper areation of the middle ear, the technique has been universally adopted.

Conclusions:

1. This is an era which must recognize dentistry as an aid to medicine and vice versa.
2. This is a subject which closely associates the orthodontist and rhinologist and for best results in the young a co-operation of the two specialties is imperative.
3. Nasal and throat operations in conjunction with orthodontic correction often gives best results to patient.
4. Orthodontic deformities and respiratory function are correlated.

THE NERVOUS SYMPTOMS IN PERNICIOUS ANEMIA*

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"The mind occasionally wanders," said Addison, when, in 1855 he gave to the world his classical description of idiopathic, pernicious anemia. This statement practically summed up what was known of the central nervous system in its relation to pernicious anemia until 1886, when Lichtheim described three cases of the condition, which presented symptoms ordinarily seen in tabes. Although Lichtenstern, two years prior to this, had published an article entitled, "Progressive pernicious anemia in tabetics," in which he considered the pernicious anemia to be dependent on the tabes, it was Lichtheim who first recognized the true significance of this syndrome.

*Abstract of paper presented before the Minnesota State Medical Association, Aug. 29-30, 1918, Duluth, Minn. and published in the Am. Jour. Med. Sc., March, 1919.

The resemblance of these cases, both clinical and particularly anatomic, to tabes dorsalis, is however, only superficial. The changes in the cord have been longest known and studied in great detail. Here the degeneration is seen to begin as small, isolated plaques, with primary involvement, as a rule, of the posterior columns, later of the lateral columns also. These plaques, by confluence and secondary degeneration ultimately bring about a diffuse and extensive disintegration of the white matter of the cord, known as subacute combined sclerosis. Although the brain was for a long time thought not to be involved in this type of degeneration, investigations of the past four years have revealed definite areas of destruction here also. Nor is pernicious anemia alone responsible for this particular type of subacute degeneration. Among the causes are the leukemias, Addison's disease, probably very severe secondary anemias, diabetes, nephritis, senility and arteriosclerosis, pellagra, tuberculosis, syphilis, leprosy, malaria, typhoid, septicemia, scarlet fever, diphtheria, influenza, chronic alcoholism, lead, phosphorus, arsenic—in short, this degeneration in the nervous system may be the concomitant of almost any chronic intoxication. And, too, in pernicious anemia, it is not the anemia so much as the associated toxin or toxins, that is responsible for the damage done the central nervous system.

The obvious conclusion, after a perusal of so long a list of etiologic possibilities would be that pernicious anemia forms an etiologic basis in but a small fraction of the cases of combined sclerosis. This is by no means true. Dana estimates this at about 10 per cent; Taylor, of 50 cases of combined sclerosis, found pernicious anemia responsible in 8, that is 12 per cent, Von Voss, basing his estimate on published cases of combined sclerosis, found pernicious anemia to be responsible in about one-third of the cases, which is approximately the percentage noted at the Mayo Clinic.

The estimation of cord changes present in pernicious anemia patients is variable and ranges from the general statement that it is present, "not in many cases of pernicious anemia" (White) to percentage estimates of approximately 2.8 (Bramwell); 11.7 (Nonne); 25 (McCrae); 40.9 (McPhadran) and 50 per cent (Henneberg). Since some of these figures were published, the technic of neurologic examinations has been greatly refined so that more accurate observations are possible. Doubtless the percentage of cases of pernicious anemia presenting evidence of cord involvement is considerably higher than any of the foregoing figures. Of 282 unquestioned and not otherwise complicated cases of pernicious anemia seen at the clinic since 1916, 150 were subjected to a detailed neurologic examination of which not less than 80.6 per cent presented indisputable evidence of the destruction of nervous parenchyma.

Approximately 12.7 per cent of the patients came for the express purpose of seeking relief from symptoms directly attributable to involvement of the nervous system. Chief among these were the paresthesias, especially numbness and tingling of the hands and feet, which were present in about 80 per cent of all cases, regardless of whether or not involvement of the nervous system could be demonstrated objectively. This was expressed variously; patients complained that their hands and legs felt dead; that their "legs felt like sticks," or "like wood to the hips," "as though in a cast," or that "the hands and feet felt padded," "like thawing out after being very cold,'' and "as though the limbs were filled with innumerable ticking watches." In some instances the entire body was numb, again some particular part, as the tongue alone. One patient complained that the buttocks were numb and felt bigger than normal. Many complained of feeling cold all the time, especially in the feet or in the knees, "as though a draft were blowing on them." In one case, the teeth and gums felt so cold as to cause the patient great discomfort. A goodly number complained of burning. Some have sticking, stinging pains in the limbs, as if they had been stung by some insect. One woman repeatedly had her daughter look for glass slivers which she thought must be imbedded in her finger tips. Shooting pains or tingling over a large surface occurs at times when some part of the body is touched as with cotton or with a pin. Ocassionally a patient complains of a girdle pain (2.8 per cent) or the sensation of a tight band drawn around the knees (1.7 per cent). A number presented themselves for examination because of inability to control the arms and legs properly. One of

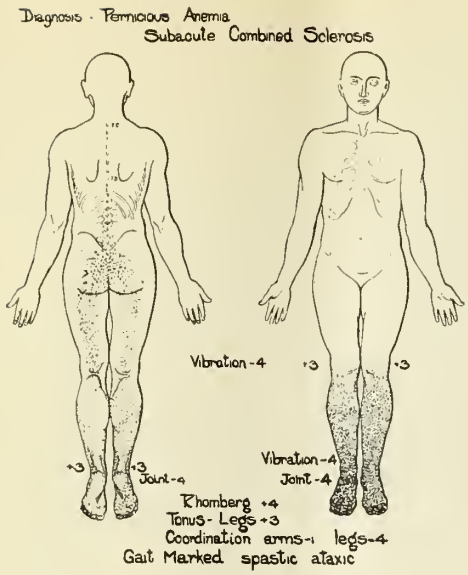

Fig. 1.

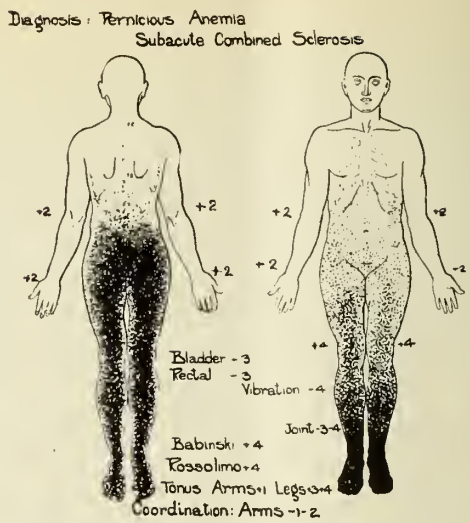

Fig 2.—Illustrating the marked though unusual degree of impairment of superficial sensibility.

these, a conductor, was seriously handicapped in his work because of the difficulty he experienced in selecting the proper coins by the sense of touch.

In the motor field, cramping of the calves occasionally proved to be the source of great discomfort. One patient complained principally of tremor. Another exhibited such marked, choreiform movements that she would repeatedly drop objects and fed herself only with great difficulty. In one instance a hemiplegic attack of three days duration was seen.

In relation to the cranial nerves, diminution in the senses of smell, taste, and hearing was noted. A central scotoma gave one patient great inconvenience. Disturbances of taste are not infrequent; to one patient, everything tasted sour, to another, bitter, and a third with normal mentality, included in her dietary egg shells and soft rocks which she carefully selected. Symptoms referable to disturbances of the eight nerve, especially, roaring, ringing or thumping in the ears, are very common. Sometimes there is a distressing dizziness, and now and then fainting spells are noted.

TABLE I

Neurologic Diagnosis Based on the Examination of 150 Cases of Pernicious Anemia in 80.6 Per Cent of Which the Central Nervous System Showed Involvement

Subacute combined sclerosis type of lesion	99.2%
Posterior sclerosis	52.2%
Combined sclerosis	45.4%
Lateral sclerosis	0.8%
Multiple peripheral neuritis also present	4.9%
Transverse myelitis with primary optic atrophy	0.8%

A glance at Table 1 makes it at once apparent that the type of lesion par excellence of the nervous system as evidenced clinically, is a subacute combined degeneration of the cord, regardless of whether this begins in the posterior or the lateral columns or in both simultaneously, though the columns of Gall and Burdock are in the majority of cases first and most extensively involved. Of considerable interest is the finding of multiple neuritis, which could be demonstrated in addition to the spinal cord.

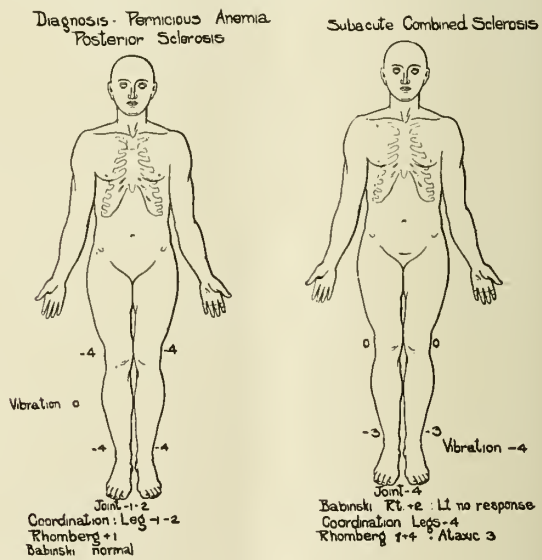

Fig. 3—Same as Figures 1 and 2. On the left the findings when first seen on the right one year and ten months later. Although the knee jerks have returned to normal due to secondary involvement of the pyramidal tracts, other findings indicate that the degeneration of the spinal cord has progressed and that in spite of a much more satisfactory blood picture.

lesion in 4 per cent of these cases, and in one instance, was present as nearly as it was possible to demonstrate this, unassociated with cord involvement.

TABLE 2

Resume of Findings in 121 Cases of Pernicious Anemia With Coincident Involvement of the Nervous System

SENSIBILITY:	Diminished	Absent		
Superficial (tactile, pain, thermal)	42.4%			
Deep				
Joint (toes)	60 %	20.		
Tendon	12.8%	0 8		
Vibration (256V)	82.4%	33.6		
Vibration or joint impaired	92			
FUNDUS:				
Pathologic	63.4			
Low-grade retinitis	33			
Hemorrhagic retinitis	29.6			
Primary optic atrophy	0.8			
MENTALITY:				
Apathy and somnolence	28.			
Irritability	9.6			
Memory defects	7.2			
Dementia	2.4			
Emotional instability	3.2			
Depression	3.2			
Psychosis	.8			
Total	35.2			
RFELEXES:	Increased	Diminished	Absent	Unequal
Patellar	39.2	28.8	7.2	24.8 14.4 21.6
Tendo-Achillis	23.2	46.4	20.8	11.2
Ankle clonus (sustained)	4.8			
Babinski positive	26.4			
Oppenheim	7.			
Chaddock	2.4			
Rossolimo	1.6			
Mendel-Bechterew	0.8			
CO-ORDINATION:	Impaired			
Arms	15.2			
Legs	55.2			
ROMBERGISM:	52.			
GAIT:				
Ataxia	28.8			
Spasticity	4.8			
Spastic-Ataxic	8.			
URINARY CONTROL:	Partial	Complete		
Incontinence	8.0	0.8		
Retention	4.0	0.8		
MUSCLES:	Increased	Dim'shd		
Tonus (legs)	16	10.4		
Power, disproportionately impaired, in legs		8.		
Complete paraplegia		1.6		
Atrophy, localized with fibrillation		0.8		
Chorieform movements		.8		

The cardinal findings anent the objective evidence pointing to involvement of the nervous system occur in the realm of sensation. Superficial sensibility was found to be definitely impaired in 42.4 per cent of the cases, excluding those in which the diminution was so slight as to be uncertain. (Fig. 1)*. As the accompanying figures illustrate, it varied considerably in degree and was usually most marked over the legs and the buttocks, there being little evidence of disasociation of touch, pain or temperature, such as is seen, for example, in tabes. (Fig. 2).

More significant still, is the disturbance of deep sensibility, particularly of vibration and of joint sensibility, which either singly or combined, were definitely impaired in 92 per cent. Here too, the disturbance is, as a rule, limited to the legs, pelvis, and lower portion of the spine, the upper portion of the body usually escaping intact. The impairment of deep sensibility is thus seen to be the most outstanding feature in the entire neurologic examination. In only 2.4 per cent of cases, was the disturbance in superficial sensibility more marked than diminution in deep sensibility.

Within the past few years, the psychic phenomena noted in these patients have been exhaustively studied and numerous contributions have appeared, many of them interesting and scholarly, although the texts in psychiatry, on the whole, dismiss the subject with a few remarks or neglect it entirely. A more careful search into the mental condition of these patients would reveal a higher percentage of abnormality than indicated in Table 2, in which only features which were marked are noted. In only one case, was there an outright psychosis present, and this was of the infection-exhaustion type. Here the anemia was ushered in with an acute hallucinatory confusion which cleared up after 3 weeks and reappeared once subsequently, pari-passu with an aggravation of his physical condition.

Relative to the condition of the reflexes, little need be added save in explanation of the chart. The absence of either patellar or tendo Achilles reflexes on one or both sides, was noted in 24.8 per cent and their inequality in 21.6 per cent.

In but one case was there noted a progressive paralysis with atrophy and fibrillary tremors of the anterior tibial group of muscles on one side, which must be interpreted as a degeneration going on in the anterior horn cells. Doubtless

*The numerals used in the figures represent degrees of diminution or increase on a scale of four; O being normal, −4 signifying complete absence, +4 very marked increase. Numerals placed next to the figure and not otherwise explained refer to the condition of the reflexes. The stippling indicates diminution in superficial sensibility. Other findings not charted are normal.

this occurs, though not with the frequency maintained by Rothmann and Teichmueller nor yet with the rarity claimed by some of their opponents.

The development of marked choreiform movements in this connection has not, as far as I have been able to learn, been reported before and is of considerable significance in connection with the pathologic alteration noted in the cerebrum of these cases.

Summary

The salient points of the knowledge gained by clinical evidence of the relation which the nervous system bears to pernicious anemia may be briefly summarized:

In 80.6 per cent of moderately advanced cases of pernicious anemia, there is indisputable evidence of nervous tissue disintegration. This is in satisfactory accord with the pathologic findings, of which we may take the figures of Minnich, who demonstrated lesions in the spinal cords of approximately 77 per cent of cases of pernicious anemia.

Subjectively, some form of paresthesia, such as numbness and tingling, is rarely missing.

Objectively, one finds the most striking disturbance in the pathologically altered reflexes, not forgetting the tendo Achilles and Babinski reflexes, and the disturbance of vibration and joint sensibilities, the former of which may readily be tested with almost any type of tuning fork.

As an adjunct in differentiating pernicious anemia from other anemias, the examination of the nervous system will be found of inestimable value; it often forms an easy way out of a most perplexing situation.

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EDITORIAL

MAJOR GENERAL LEONARD WOOD

"Major General Leonard Wood combines in a very high degree the qualities of entire manliness with entire uprightness and cleanliness of character. He is a man of high ideals who scorns everything mean and base and who possesses those robust and hardy qualities of body and mind for the lack of which no mere negative virtue can atone. Hs is by nature a soldier of the highest type."—Theodore Roosevelt.

General Leonard Wood comes of New England stock and possesses many of the rugged honest qualities of his predecessors. Born on October 9, 1860, the son of a fine old type physician, his ambitions to enter the navy was overruled by home influences and he studied medicine at Harvard. While an interne in the hospital an emergency arose which showed at a comparatively early age a characteristic of this unusual man. It was a question of breaking a hospital rule requiring the interne to await a staff surgeon or of proceeding with an operation on a child where delay was dangerous. He did what he believed to be right, operated, ignoring red-tape. The child recovered but Wood was dismissed from the hospital.

After a year of practice in a slum district in Boston the young physician passed second in a class of fifty-nine taking the examination for the medical corps of the army.

As a captain in the Medical Corps Wood distinguished himself by ever being ready and volunteering for the most dangerous and difficult work. It was said of him that "no soldier could outwalk him, could live with greater indifference on hard and scanty fare, could endure hardship better and do better without sleep." For his part in the surprise and capture of Geronimo, the notorious Apache chief on July 13, 1886, Wood was awarded the esteemed Congressional medal of honor and given the commission of colonel.

Early in the nineties he was made presidential surgeon and it was while stationed at Washington that he met Roosevelt. These two unusual men with many of the same fine qualities of manhood naturally developed a strong friendship. Roosevelt was at this time Assistant Secretary of the Navy and was doing every thing in his power to have the navy prepared for what he believed an inevitable and just war with Spain.

Just before the Maine was sunk Wood was thinking strongly of resigning from the army and changing his occupation to that of a sheep-rancher out west. This event caused him to plan for active service in case of war.

When war actually came the country was in a deplorable condition of unpreparedness. In order to raise a force quickly, Wood and Roosevelt conceived the plan of raising a force of cavalry about one thousand strong from among western cow-boys and athletes—men who already knew how to ride and shoot. Roosevelt accepted a commission as Lieutenant-Colonel with the provision that Wood be made Colonel in command. Wood, with a fine display of knowledge of how to accomplish things thru military channels, mobilized his force in Texas in twenty-six days. After a short period of training the Rough Riders embarked for Cuba on June 13, 1898 without their horses for a campaign against Santiago. Their commander Colonel Wood, at this time comparatively little known throughout the country was within a month made brigadier-general of

volunteers and on July 19 was appointed Governor General of Santiago. In this position he was civil as well as military governor of the city. It was as Governor General of Cuba that Wood showed his versatility as a law maker, judge, sanitary expert and governor, in building roads, establishing hospitals, organizing a school system and devising a scheme of finance. What Cromer did for Egypt, Wood did for Cuba.

After leaving Cuba Wood was sent to Europe to attend the German Military maneuvers and he seems to have left some impression in Europe because of his knowledge of military affairs.

It has been commonly believed that much of Wood's success was directly due to favoritism from Roosevelt. While Roosevelt's friendship and admiration undoubtedly exerted an influence, it is worthy of note that the only promotion Roosevelt was able to give him was that of moving him from the head of the list of Brigadier Generals to be a Major General. It was McKinley who gave him his earlier promotions, and Taft who appointed him Chief of Staff, the highest military position attainable. Under Roosevelt's administration Wood was sent to take charge of affairs in the Philippines. He made the trip by way of the Suez and spent several weeks on the way visiting English and Dutch colonies and absorbing first hand information regarding colonial administration. In the Philippines he showed the same energy and fairness which characterized his Cuban administration.

When the Great War started in August 1914 Wood began to preach and act preparedness. With an eye to training college men for commissions in the immense army we would be called upon to raise if we became involved, he was the prime mover in the establishment of the training camps at Plattsburg and Monterey. His methods were later used in numerous officers' training camps thruout the country.

Wood was sent abroad before we declared war in 1917 to observe military methods and report. A politician might have made use of this opportunity to bring himself before the public eye. Not so in his case. Wood has shown himself thruout his career a man of action rather than of words. In fact tho much like Roosevelt, he seems to have differed in one respect. While Roosevelt may be said to have been a man of remarkable words and deeds, Wood has had little to say about himself. While Roosevelt may be said to have taken a step forward Wood ever took one backward.

When we actually declared war in April 1917 Wood, our senior Major-General—a former Chief-of-Staff, was left in Charleston, S. C. and another general put in command of the forces at the front. He said nothing. Later after training the 89th Division at Camp Funston and taking them east to embark, on the eve of their departure he received orders to take a desk assignment at San Francisco. He again said nothing. He did go to the president and as a result was sent back to Funston to train more troops. In an interview with a reporter he said of his visit "All that I feel privileged to say regarding my talk with the president is that he was very courteous and very considerate."

The armistice found Wood at Camp Funston confronted by a new problem. The incentive for his citizen soldiers had been suddenly removed. It was necessary to control some 27,000 men, newly made soldiers, affected as 99 per cent of the remaining three and a half million were. He met the situation with constructive regulations and converted the camp into a huge university with just enough drilling to keep the men in soldierly form. His methods were successful.

Since the armistice many have had the privilege of hearing General Wood. Altho not an orator his words ring true. He possesses more than mere personal magnetism. His energy and fearlessness combined with his known integrity single him out as one we like to consider the ideal American type.

THE TUBERCULOSIS SITUATION

Tuberculosis has shown a marked and uniform decrease since the early eighties, not only in the United States but throughout most of the so-called civilized world. Just what effect the War has had on this decrease, it is too early to state but it is quite possible that the mortality curve will show a definite rise for a few years. The mortality records will tell.

After all, the cause of death as shown by the death certificate is the most accurate indication of the prevelance of a disease. This of course would be more accurate if we had universal post mortems and these performed only

by trained pathologists. No people has reached the degree of education and training necessary to make such a procedure at all possible.

Undoubtedly a few fatal cases of tuberculosis and even pulmonary tuberculosis are falsely certified by attending physicians. But this number must be small because about ninety per cent of tuberculosis deaths are due to the pulmonary form and few errors are made in its diagnosis.

The Federal Census Bureau calls attention to the fact that during the thirteen years up to and including 1917 the mortality rate for tuberculosis has been reduced from 20 per 10,000 in 1904 to 14 in 1916, a decrease of nearly 30 per cent. Tuberculosis has gone from the position of first as a cause of death to third. According to the 1917 figures, heart disease ranked first with penumonia a close second. Each of these three diseases accounts for slightly over ten per cent of the total mortality.

Attention should be drawn to the fact that this marked reduction in mortality is not limited to the last thirteen years. There was just as marked a reduction in the number of cases per 10,000 population in the thirteen years preceeding 1904. This is shown by records in the older localities where vital statistics are more dependable—for instance in Massachusetts and Prussia.

How can this encouraging reduction be accounted for? Tuberculosis is known to have existed for two thousand years. There have undoubtedly been waves of increase and decrease in its prevalence in various nations and localities during this period. Nationality, climate, economic conditions all play their part. Why this sudden definite and persistent decrease since the early eighties throughout a great majority of countries where vital statistics have been kept? Largely because it was in 1882 that Koch demonstrated the tubercle bacillus and tuberculosis was definitely classified as contagious. When a disease is known to be definitely caused by bacteria and "catching" the normal individual will not deliberately expose himself. (We venture to say that Dr. Hill's friend of Physical Culture fame is to that extent normal.)

Education plays a fundamental role in the control of all contagious diseases. The anti-tuberculosis campaigns started some ten to fifteen years ago in European and American countries has undoubtedly been working along the right lines inasmuch as education and publicity have been the main objectives. Something more than just knowledge of the fact of contagion was necessary. The manner of preventing contagion had to be supervised in the home more than anywhere else. Hence the visiting nurse. Contagion from tuberculosis occurs as with the majority of contagious diseases, most frequently in childhood. The sanataria in addition to providing for the care of the sick, perform the important function of isolating the contagious cases.

Those devoting themselves to fighting tuberculosis may take a great deal of credit for this continuation in the mortality reduction for tuberculosis. It is notorious that the medical profession has not been doing its part in assisting the anti-tuberculosis workers. The fact that in one of the largest cities of our state about a third of tuberculosis deaths are never previously reported to the health department is sufficient substantiation of this statement. This means that a third of all cases of tuberculosis are not reported until death and do not receive any benefit from anti-tuberculosis activities.

If anti-tuberculosis work is carried out as it should be, in co-operation with the physician in an effort to institute sanitary conditions in the home or remove the tuberculous individual to a sanitorium there is no legitimate excuse for this laxity on the part of us physicians.

Prevention of contagion is most important in the fight against this scourge. Cure at home or a sanatorium is a prolonged process. It does occur in a very definite percentage of cases and this fact justifies our recommendation of the sanatorium. On the other hand sanatorium authorities must make their treatment more attractive and social workers take better care of the patient's families at home if the object of the sanatorium is to be attained.

Never tiring efforts on the part of anti-tuberculosis workers and physicians are necessary if the downward trend in the tuberculosis mortality is to continue.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNESOTA STATE MEDICAL ASSOCIATION

The Minnesota State Medical Association will meet in Minneapolis, October 1st, 2nd and 3rd. The sessions will be held at the Radisson Hotel and in the rooms of the Hennepin County Medical Society. The first session of the House of Delegates will occur October 1st, in the afternoon; and the scientific sessions will occur October 2nd and 3rd. These sessions will be as usual, those of the surgical and medical sections. The chairman of the surgical section is Dr. R. E. Farr, Minneapolis, and the secretary is Dr. H. P. Ritchie of St. Paul. The chairman of the medical section is Dr. E. L. Tuohy of Duluth, and the secretary is Dr. J. P. Schneider of Minneapolis.

The afternoon of Friday, October 3rd will be devoted to a joint session at which the president's annual address will be given, and in addition a symposium of interest to both medical and surgical men. The annual banquet will occur the evening of October 2nd at which time Dr. W. W. Herrick of New York will deliver an address on "Meningococcus Infection including Cerebrospinal Fever."

THE SOUTHERN MINNESOTA MEDICAL ASSOCIATION

The mid-summer meeting of the Southern Minnesota Medical Association, was held at Rochester June 23rd and 24th. The registration of three hundred and sixty odd, showed a very large attendance.

Dr. John Williams of Lake Crystal, the president, conducted the general meeting most satisfactorily.

The social features of the meeting were most hospitable, no item however small was overlooked that could in any way contribute to the comfort and entertainment of the visitors. The luncheons on Monday and Tuesday at the residences of Dr. Wm. J. and Charles H. Mayo, respectively, were beautiful garden parties, and most thoroughly enjoyed by the hundreds of guests who passed the bounteous serving tables and then dispersed themselves in congenial groups throughout the grounds.

The banquet Monday evening was tendered by the staff of the Mayo Clinic, six hundred and sixty-five participated. At the banquet the guests were welcomed in short speeches by Dr. C. H. Mayo and W. J. Mayo. Dr. J. H. Adair made a most happy response in giving a toast to our hosts. Dr. Antoine Depage, chief surgeon of the Belgian Army, made the principal address on the lesson in surgery taught by the experiences of the world war. Dr. Willy Meyer of New York City, spoke on Air Tight Thoracic Drainage.

Dr. A. D. Bevan was prevented by sickness from being present. Dr. G Bowman closed a very interesting evening by a few pointed remarks on Hospital Standardization.

The clinic at the different hospitals were the centers of interest each morning. The reading and discussion of a number of papers consumed the afternoon.

WABASHA COUNTY MEDICAL SOCIETY

The fifty-first annual meeting of the Wabasha County Medical Society was held at Lake City, Thursday, July 10th, Dr. E. H. Bayley of Lake City, presiding.

The business session was held in the forenoon. Dr. H. E. Bowers of Lake City was elected to membership.

The following officers were elected for the ensuing year: President, Dr. J. A. Slocumb, Plainview; vice-president, Dr. J. T. Bowers, Lake City; secretary-treasurer, Dr. W. F. Wilson, Lake City delegate to State Association, Dr. D. S. Fleischauer Wabasha, alternate, Dr. E. H. Bayley, Lake City; censor for three years, Dr. A. A. Rankin, Zumbro Falls. It was voted to hold the next annual meeting at Zumbro Falls, the society to be entertained by Drs. Rankin and Heagerty.

The meeting adjourned for dinner, the society and guests being entertained by the physicians of Lake City.

The afternoon session was held at the Lake City Hospital, where the following program was presented:

President's Address: "Cardiac Hypertrophy and Dilatation"—Dr. E. H. Bayley, Lake City.

Paper—"Surgery of the Gall-bladder"—Dr. J. T. Bowers, Lake City.

"Bio-Dynamo-Chromatic Diagnosis," with demonstration of apparatus and method—Dr. G. Schmidt, Lake City.

Upon request, Major W. B. Heagerty gave a talk on some of his army experiences while on duty in France and Germany.

Fifteen physicians were in attendance.

CORRESPONDENCE

202 Essex Bldg., Minneapolis, Minn.
July 10, 1919.

Editor Minnesota Medicine,
Lowry Bldg., St. Paul, Minn.

We would greatly appreciate your kindness if, in the next issue of "Minnesota Medicine," you would call attention to the fact that we are looking for a physician who would be willing to travel in the Northern Division to establish First Aid Classes, give instruction in First Aid and Accident Prevention, and organize First Aid work. The salary would be in the neighborhood of $2,000.

Very truly yours,
Henry W. Cook, M. D.,
Medical Adviser, Nor. Div., Am. Red Cross

OBITUARY

DR. HUGH F. McGAUGHEY

Dr. Hugh F. McGaughey of Winona, Minn., died very suddenly in Tacoma, Washington, on June 20, 1919. He was born in Winona on July 25, 1873, and received his college education at the University of Michigan and his medical training at the College of Physicians and Surgeons in New York.

At a special meeting of Winona County Medical Society held June 23, 1919, the following resolutions were passed regarding the death of Dr. Hugh F. McGaughey:

The members of Winona County Medical Society record with sincere regret the untimely death of Dr. Hugh F. McGaughey.

As a student and practitioner he had proved himself of an unusually high order of ability.

Sound in judgment, a clear thinker, an ever ready friend in distress, he endeared himself to all those who had learned to rely on his professional services.

In his death we have lost a valuable friend and fellow practitioner.

Recognizing his worth and as an evidence of our appreciation of his worth, we, the members of Winona County Medical Society, do hereby resolve that the foregoing brief memorial of the connection of Dr. Hugh F. McGaughey with this society be entered in the permanent records of the society, and that a copy be delivered to the family of the deceased.

Winona County Medical Society
By E. D. KEYES, Secretary pro tem.

LIEUTENANT EMIL KING

First Lieutenant Emil King, Fulda, Minn., a member of the 303 Sanitary Train, and at the time of his death, in charge of a field hospital Company was accidentally killed by a motor lorrie on the night of Sept. 11th in the great St. Mihiel drive.

Lieutenant King had been at the front with his Field Hospital Unit, when on account of the severe shelling, they were compelled to move farther to the rear. These movements were all necessarily under cover of darkness. It was an exceptionally black night and raining. He was cautioning his men to keep on their side of the road, in order that they might be safe from motor transportation. Standing in front of them, looking to their welfare and performing his duty with the highest efficiency, he was struck by a lorrie, causing internal injuries, which produced death in a few hours.

It was my pleasure to know Lieutenant King very intimately for a year before going to France. It was doubtful at one time, on account of his age, if he would be allowed to go. He came to me with tears in his eyes and begged me to intercede in his behalf to the Division Surgeon, that he might be allowed to accompany his organization overseas.

Lieutenant King was one of the first few medical officers who were called into training at Fort Riley, Kan. After spending three months in this intensive training camp, he was assigned to the 26th Engineers at Camp Dix, N. J., 78th Div. N. Army. His ability was soon recognized and he was transferred to the sanitary train, and given command of a company. He was a tireless worker and instilled his energy and patriotism into the men, who were afterwards to witness his death. He was born in Austria and came with his parents to this country when eleven years of age. Although born in the land of the men he was fighting, no greater patriot ever answered his country's call.

Having been given a fairly good description of his burial place, being well acquainted with the terrain of that sector, a search was made for the grave. The hunt was successful, having located it near Fey en Hey, which is in the Toul Sector almost at the extreme south end.

It is also very near Mamey at which place his Division was stationed at the time of his death. It is also less than fifteen miles from that famous city of Metz.

Thus runs the story of another noble medical officer who paid the supreme sacrifice, that the "world might be safe for Democracy."

(Signed) Dr. F. J. McAlester,
Hawarden, Iowa.

OF GENERAL INTEREST

Dr. H. D. Diessner has removed from Chaska to Waconia.

Dr. C. R. Stanley formerly of Ely will locate at Fulda.

Dr. L. H. Bussen of Baker, N. D., has located at Swanville.

Dr. Holte of Crookston is motoring with his family through the West.

Dr. W. W. Drought has returned from the Pacific Coast to Fergus Falls.

Dr. J. T. Rose has been honorably discharged and has returned to Lakefield.

Dr. Charles H. Payette of West Duluth was married to Miss Mary Pepin of Billings, Mont.

Dr. A. F. Hunte, after serving for two years has resumed his practice at Fairmont.

Dr. G. J. Thomas has returned from overseas and will resume his practice in Minneapolis.

Dr. W. B. Heagerty of Mazeppa was married on June 19th to Miss Elise Schwirtz of Wabasha.

Dr. W. O. Tessier who has been in Red Lake Falls for more than a year will relocate at Oklee.

Dr. Harold Pederson of Minneapolis has removed his office to Suite 427-431 La Salle Building.

Dr. C. A. Traeger, who has been in the service for more than a year, has returned to Faribault.

Dr. J. F. Lynn has returned from overseas and will resume his practice in September in Waseca.

Dr. U. V. Portman has returned to Jackson after having served in the Medical Corps of the Army.

Dr. E. W. Rimer has received his honorable discharge and has resumed his practice at Breckenridge.

Dr. H. B. Rice has resigned as assistant superintendent of the City and County Hospital of St. Paul. He will take a post graduate in medicine in New York. He is succeeded by Dr. C. H. Pelton.

Major Bronson Crothers of St. Paul landed on June 27th and has been mustered out of service. He expects to resume his practice in the near future.

Dr. C. E. McGeary, recently with the Minneapolis City Hospital, has opened offices in the Belanger Building, Minneapolis.

Dr. W. F. Maertz, after a year and a half service in the army in the states and France, has again opened up his offices at New Prague, Minnesota.

Dr. H. W. Hill, executive secretary of the Minnesota Public Health Association, was elected president of the National Anti-Tuberculosis Association.

Col. Chas. L. Greene has received his discharge from the army and has resumed the practice of internal medicine at his office in the Lowry Building, St. Paul.

Dr. William Gamble has received his honorable discharge from the Navy, where he held the rank of senior lieutenant, and has associated with Dr. J. E. Crewe of Rochester.

Announcement has been received of the marriage on June 27th at Enfield, England, of Miss Daisy Thomson to Capt. John Steele Abbott of St. Paul. Dr. and Mrs. Abbott are expected in St. Paul in the near future.

Dr. P. M. Hall, formerly of Minneapolis, and now superintendent of the Walker State Tuberculosis Sanatorium, is taking a course in the School of Tuberculosis in Saranac, N. Y. He expects to return to Walker in August.

Dr. E. J. Huenekins of Minneapolis has just returned from a trip to the Pacific Coast. He attended the meeting of the Oregon State Medical Association in Portland on June 26th to 28th and read papers on "Practical Everyday Pediatrics and "The Care of the New-Born with Special Reference to the Prematures." He also addressed the evening meeting. A North Pacific Pediatric Society was created.

NEW AND NON-OFFICIAL REMEDIES

During June the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Non-Official Remedies:

Robert McNeil:
Chlorcosane (McNeil).
Dichloramine-T (McNeil).
Lederle Antitoxin Laboratories:
Pituitary Extract-Lederle.
Ampules Pituitary Extract-Lederle, 0.5 Cc., 1 Cc.
Tuberculin "O. T." (Old Tuberculin).
Tuberculin "B. E." (Bacillary Emulsion).
Tuberculin "B. F." (Bouillon Filtrate).
Antidysenteric Serum (Polyvalent).
Streptococcus Vaccine (Polyvalent).

PROPAGANDA FOR REFORM

Collosol Preparations.—The Council on Pharmacy and Chemistry reports that Collosol Argentum, Collosol Arsenicum, Collosol Cocain, Collosol Cuprum, Collosol Ferrum, Collosol Hydrargyrum, Collosol Iodin, Collosol Manganese, Collosol Quinin and Collosol Sulphur are inadmissible to New and Non-Official Remedies because their composition is uncertain. In the few cases in which the therapeutic claims for these preparations were examined, the claims were found so improbable and exaggerated as to have necessitated the rejection of these products on this account. The term "Collosol" appears to be a group designation for what are claimed to be permanent colloidal solutions, marketed by the Anglo-French Drug Company, Ltd., London and New York. Were this claim correct, the Collosols should contain their active constituent in the form of microscopic or ultramicroscopic suspensions. The Council was, however, obliged to question the colloidal character of the preparations. A number of samples submitted to the Council had separated and Collosol Hydrargyrum was not a colloidal solution at all; also the ampules of Collosol Ferrum contained a flocculent precipitate. If either of these two preparations were injected intravenously as directed, death might result (Jour. A. M. A., June 7, 1919, p 1694).

Pulvoids Calcylates Compound.—The Council on Pharmacy and Chemistry publishes a report on Pulvoids Calcylates Compound (The Drug Products Co., Inc.), not so much because the preparation is of any great importance, but as a protest against the large number of similar irrational complex mixtures which are still offered to physicians. These "Pulvoids" are tablets, each of which is said to contain "Calcium and Strontium Disalicylate 5 grs., Resin Guaiac ½ gr., Digitalis ¼ gr., Colchium (colchicum) Seed ¼ gr., Squill ¼ gr., Cascarin 1-16 gr. with aromatics." They were advertised among "Approved Remedies for La Grippe and 'Flu' ". . . The Council admitts that salicylates have a field in influenza in that they often afford relief from pain. There is no reason to suppose that a mixture of strontium and calcium salicylate—the calcium and strontium disalicylate of the "Pulvoids" is probably a mixture of stronium and calcium salicylates—has any greater salicylic effect than an equal amount of sodium salicylate. On the other hand it is worse than useless to give colchium, squill and digitalis for the relief of such pain. No educated physician will give resin of guaiac and "cascarin" in fixed proportions with salicylates (Jour. A. M. A, June 14, 1919, p. 1784—

Antithyroid Preparations (Antithyroidin-Moebius Thyreoidectin) Omitted from N. N. R.—New and Nonofficial Remedies, 1918, contained a discussion of "antithyroid" preparations and described two of these: Antithyroidin-Moebius (E. Merck, Darmstadt, Germany) and Thyreoidectin (Parke, Davis and Company, Detroit, Mich.). The "antithyroid" preparations have not realized the expectations of their promoters, and are viewed with skepticism by practically all critical clinicians. Consequently, notwithstanding the cautiously worded claims made for Thyreoidectin, the Council voted to omit this preparation from New and Nonofficial Remedies (Antithyroidin-Moebius had already been omitted because it was off the market) (Reports Council Pharm. and Chem., 1918, p, 50).

Borcherdt's Malt Extract With Alternatives.—Each fluid-ounce of this was claimed to contain iodin 1-30 grain, calcium iodid 1 grain, potassium iodid 2 grains, calcium chlorid 8 grains. The preparation was declared inadmissible to New and Nonofficial Remedies: (1) because it did not contain free iodin as claimed; (2) because it was needlessly complex, and therefore irrational; (3) because the name of the preparation is not descriptive of its composition, but therepeutically suggestive (Reports Council on Pharm. and Chem., 1918, p. 51).

Cephaelin and Syrup Cephaelin-Lilly Omitted from N. N. R. and Syrup Emetic-Lilly not Accepted.—New and Nonofficial Remedies, 1918, described cephaelin (an alkaloid cotained from ipecacuanha root) and listed Syrup Cephaelin-Lilly as a pharmaceutical preparation of it. In 1918 Lilly and Company advised that the name of its preparation had been changed to Syrup Emetic. The Council directed the ommission of Syrup Cephaelin-Lilly and voted not to admit Syrup Emetic because the name does not indicate the potent ingredient of the simple pharmaceutical preparation and in that it is therapeutically suggestive. Emetics are powerful agents, and preparations containing them should not be sold under non-informing names. As the cephaelin syrup was the only preparation of cephaelin admitted to New and Non-official Remedies and as the alkaloid appears to have no important therapeutic field, the Council also omitted cephaelin from the book (Reports Council Pharm. and Chem., 1918, p. 52).

Colalin Omitted From N. N. R.—Colalin is a bile salt preparation claimed to consist essentially of hyoglycocholic and hyotaurocholic acids. It is manufactured by Rufus Crowell and Company, Somerville, Mass., and marketed by Schieffelin and Company. An examination of the current advertising for Colalin revealed that claims were made for it which were not in harmony with the known actions of bile preparations. As these claims were not substantiated by evidence nor revised in accordance with a request sent to the manufacturer and the agent, the Council directed the omission of Colalin from New and Nonofficial Remedies (Reports Council on Pharm. and Chem., 1918, p. 52).

Diphtheria Bacillus Vaccine Omitted From N. N. R.—The Council directed the omission of diphtheria bacillus vaccine from New and Non-official Remedies because the mauufacturer of the only preparation of this vaccine advised that its sale had been discontinued (Reports Council Pharm. and Chem., 1918, p. 54).

Empyroform Omitted From N. N. R.—Empyroform is a condensation product of birch tar and formaldehyde. The Council voted to omit the preparatiou from New and Nouofficial Remedies because its usefulness is doubtful and because the agents were not in a position to submit further evidence for its value (Reports Council Pharm. and Chem., 1918, p. 55).

Foral.—Foral is a depilatory preparation sold with special claims for its use for the removal of hair prior to surgical operation or the dressing of wounds. The Council declared Foral inadmissable to New and Nonofficial Remedies: because it is an unessential and irrational modification of the well known depilatory composed of barium sulphid 2 drachms, zinc oxid 3 drachms and starch 3 drachms, and because it is marketed under a noninforming name and with unwarranted claims (Reports Council Pharm. and Chem., 1918, p. 55).

Glycerosal.—This was said to be a mixture of glyceryl salicylates prepared by heating methyl salicylate with glycerol. The Council declared Glycerosal inadmissible to New aud Non official Remedies because unwarranted claims were made for it and because there was no evidence to indicate that it had any advantage over other salicyl preparations, such as methyl salicylate, spirosal, etc. (Reports Council Pharm. and Chem., 1918, p. 57).

Chionacea.—According to the catalog of Nelson, Baker and Co., the composition of Chiouacea is: Each fluidounce contains: Tinct. chinonanthus 180 min., Tinct. echinacea 90 min., Euonymus 12 grs., Lappa 16 grs., Traxacum 16 grs., Syrup senna 120 min., Sol. sodium phosphate conc. 24 min. The merits of the preparation may be estimated by the following: According to the Epitome of the U. S. P. aud N. F., chionanthus, or friuged tree bark, is an obsolete drug formerly used by eclectics and homeopaths in hepatic disorders and syphilis but has no definite indications for its use. Echinacea was examined by the Council on Pharmacy and Chemistry in 1909. Of this drug, the Epitome states "The claims for this drug as an 'alternative' and antisyphilitic are extravagant and unwarranted. There are no established indications for its use." (Jour. A. M. A., June 14, 1919, p. 1787.)

More Misbranded Nostrums.—The Following have been found misbrauded under the Federal Food and Drugs Act: Samaritan Nervine, containing nearly 19 per cent. potassium bromid.; Phenol Sodique, reported on by the Council on Pharmacy and Chemistry in 1907; Nuxcara, containing alcohol, cascara strychnin and berberin; Dr. Upham's Valuable Electury, a tablet composed essentially of resins, sugar, sulphur, gum and vegetable extractives. (Jour. A. M. A. June 21, 1919, p. 1858).

PROGRESS IN MEDICINE AND SURGERY

THE TREATMENT OF TRACHOMA AND CHRONIC CONJUNCTIVITIS WITH NEGATIVE PRESSURE: B. M. Howley, (American Journal of Ophthalmology, vol. 2, No. 3, March, 1919) gives a written account of a method that may be employed in the treatment of trachoma which he claims is far less painful than rolling the lids or grattage and apparently as efficacious—negative pressure.

He holds that treatment with blue stone is the most barbaric that could be devised. Yet the application of copper sulphate stick in trachomatous conditions has withstood the test of time and, in the opinion of the reviewer, is not such brutal treatment if used with the proper technique.

Negative pressure is applied to the conjunctiva as follows: "The conjunctiva of the upper and lower lids, as well as the culdesac, is cleansed with a solution of boric acid or bichlorid of mercury 1-10,000." It would appear that this procedure is unnecessary if the following manipulations are effective: "After everting the upper lid, I place the application on the lid and with a sweeping motion run the applicator over the conjunctival surface from the inner to the outer canthus or vice versa. Many sweeping applications can be made to the lid in this way until the tube shows secretions with some blood, if the surface is irregular or granular, and you will be amazed at the amount of secretion that comes from the lids."

If the trachoma is slow to yield he supplements suctiou by scarification. The author has treated about 25 cases in this way. The mild cases yield to negative pressure alone, but if protracted moderate scarification with suction yield a quicker result. "Chronic conjunctivitis which resists treatment by ordinary methods will speedily yield to negative pressure with local applications."

P. D. Berrisford.

THE RELATION OF PAIN IN GASTRIC AND DUODENAL ULCER TO MUSCULAR ACTIVITY OF THE STOMACH: John Homans, (Am. Jour. Med. Sc., Jan., 1919) admits that his experiences with gastric and duodenal ulcer controverts the newly accepted dictum of more recent gastric physiology namely that pains in these cases are similar to so-called "hunger pains" and are produced by muscular contractions of the stomach registered nervously through the vagus.

While acknowledging that the work along this line by such men as Ginsburg, Tuneponski, Hamburger and Carlson is very convincing and their graphic tracings all that could be desired, he still feels that clinically many cases do not show any accessions of pain but the pain is continuous and no rythmicity can be read into the histories.

To prove his contentions, he reports three cases very carefully studied clinically and by the X-Ray which were checked up at operation:

In Case I there was a diminution of stomach contraction with the onset of pain;

In Case II the tracings showed vigorous muscular contractions but no pain;

In Case III showed the usual "hunger contractions" before pain began but after pain began the contractions ceased.

He feels convinced, therefore, that even in the presence of an active ulcer far removed from the pylorus, powerful muscular contractions of the fundus may cause no pain, and pain may occur independently of any muscular activity of the fundus.

CHAS. N. HENSEL.

TREATMENT OF PURULENT ARTHRITIS BY WIDE ARTHROTOMY FOLLOWED BY IMMEDIATE ACTIVE MOBILIZATION: Dr. C. Willems, Ghent, Belgium (Surg. Gyn. and Ob., vol. xxvii, No. 6), states that no therapeutic law has been more firmly established than that which has made immobilization obligatory for every joint injury, from the mild to the most severe. Nevertheless we all know its consequences; muscular atrophy which is rapid for certain muscles such as the femoral quadriceps, and stiffness of the joint. These conditions do not always yield completely to varied and very long physiotherapeutic treatment. In recent years there has been a mild reaction against systematic and prolonged immobilization. Willems commenced with evacuatory punctures to drain traumatic effusions of the knee, hemarthroses, and hydrarthroses, and by making the patient walk immediately. He found that they could not only do this without any difficulty but their lesion cured in a few days without leaving any trace.

The writer used this method very extensively in war wounds and with marked success. It was used in the simplest and most severe conditions. In simple lesions immediate active mobilization obviates atrophy and ankylosis. In purulent arthritis it seeks on the contrary to drain the articulations. In the first case the joint must be completely closed; in the second it must be left widely open. The mobilization must be active, that is to say, made by the patient himself by muscular contractions. Extension, flexion and rotation should be attained. Mobilization must be started as soon as the patient wakes up from the anaesthetic. Active mobilization is not painful in the true sense of the term, except when it displaces large bone fragments and in such cases it is contra-indicated. Willems claims that he accomplishes more than drainage. He obtains preservation of the articular mobility. This is due to the fact that the perfect drainage limits infection to the synovia alone and prevents its propagation to the cartilage and bone.

Contra indications,—when the arthritis is accompanied by an intra-articular fracture in which there is fear of displacing the fragments, and primary destruction of the ligaments and the articular capsule.

Many good illustrations accompany the article.

E. M. JONES.

ANGIOMA OF THE LARYNX: Richmond McKinney, M. D. (Journal of Laryngology, Rhinology and Otology, vol. xxxiv, No. 2, Feb, 1919), reports a case of this unusual rarity, a short resume of the case history will be of interest. A young man thirty-five years of age stated he had been hoarse for over one year. At times the condition improved. There was no pain but he suffered voice tire and exhaustion. Four years before he had been infected with lues, secondary symptoms were manifested during later months continuing for about one year, he had some paresis of left arm and hand. Insomnia and symptoms referable to the nervous system were present. Wasserman was positive. He was given thirty-five doses of salvarsan also intra-spinal injections of mercury. Hoarseness continued. On examining the larynx a subglottic tumor the size of a large pea, bluish red in color and with a raspberry-like surface was seen attached anteriorly beneath the right cord by a pedicle. With respiration the tumor would flop up into the glottis. The tumor was removed by indirect method under local anaesthesia and the pathologist reported the growth to be an angeioma. After removal of the growth the voice became normal and on repeated subsequent examination there was no evidence of recurrence.

With reference to the condition it might be stated that from literature reports it is of great rarity but forty-three cases are recorded.

GEORGE C. DITTMAN.

THE NATIONAL MEDICAL MUSEUM: Chas. H. Mayo M. D. (Abstract of paper presented at A. M. A. session June 1919) declares the medical profession may be justly proud of the record made by organized medicine during the war. In this war there were two deaths from injury and its results to one of disease and yet the world lauded the strategy developed by commanding officers while the real strategy was the control of disease

by the medical corps. A wonderful medical organization was created by former Surgeon General Gorgas. In France the practical application ofthe active work of the medical department was carried on under the efficient direction of Surgeon General Ireland.

The Government in the past has been at no expense in the training of its medical officers. In organizing the American medical profession for service in the war no account was taken of the fact that the men in the Medical Reserve Corps had had an average training of at least twenty years, and that their university course and medical course had cost not less than $5,000 per individual. Rank according to responsibility was withheld in most instances until the war was nearly over. The necessity of higher rank is essential only as it represents authority. The protection against disease and the care of the health of the men in service during the training for war and during the war has stimulated the demand for nation wide safeguarding of the health of the people.

Undoubtedly great good will come through educational publicity by the development of the National Medical Museum in Washington which now houses the splendid medical library of the Surgeon General's Office. A series of like departments are visualized; one will be devoted to the various diseases, contagious, preventable and controllable, from acute and chronic infections, and those diseases of both man and animal, also the insect carriers of disease, one to the missiles of the present war and the character of wounds produced by them, etc. The dentists will have a department to demonstrate the dangers of focal infections. All this will mark an epoch in the teaching of preventive medicine and of surgery. It is Surgeon General Ireland's desire to co-ordinate hospital work at the Walter Reed Hospital with medical instruction for army officers and with the work in the laboratories of the National Medical Museum.

England is establishing a Ministry of Health with supervision of all the educational problems relating to health, sanitation, and preventive medicine. Medicine has been tried and proved to a large degree that will enable it to stand comparison with any other effectual work of our Government. Why not, therefore, establish a Cabinet Officer of Health and unite, or at least harmonize with efficiency of management, all of the diverse medical activities now distributed among many cabinet departments and sub-departments?

THE OPERABILITY OF CANCER OF THE STOMACH AS DETERMINED BY THE X-RAY: R. D. Carmen M. D. (A. M. A. meeting, June, 1919) states that X-ray examination seems the most certain clinical means of gaining some pre-operative information concerning lesions of the stomach. The X-ray evidence of the size, shape, and position of a lesion and the Roentgen signs of gastric pathology may be the first definite indication of gastric cancer and when the tumor is not palpable the only knowledge significant in determining before incision is made the chances for the tumor's removal.

The operability of cancer of the stomach, interpreted from the X-ray findings, place it in one of three groups, the operable, the border line, and the inoperable. The location of a tumor as shown by the X-ray, automatically defines the possibility of resection of the stomach, in-so-far as the stomach is concerned, depending on the Roentgen division of the stomach in which the tumor is found, as the pars pylorica, pars media, and pars cardiaca are designated as the operable, questionable, and inoperable zones, respectively.

Tumors in the lower third of the stomach, although they are always very suspicious of malignancy, as approximately 70 per cent of all cancers of the stomach occur in the pyloric end. are the most favorable for removal. Malignancy may often be recognized in the character and size of the filling defect. but it is of no importance in limiting operability which in tumors of this first group, depends on a condition which the X-ray is unable to detect except in the rarest cases, and which is not often discovered by other clinical means, metastasis. No matter what the location or size of a gastric cancer, if it has perforated or if the disease has spread beyond the stomach wall by the lymphatics, operation is useless.

The tumors of the second group are classed as border-line cases because they extend so far up onto the stomach wall that resection becomes questionable, especially when allowance is made for the possibility of a scirrhous cancer which may invade the stomach wall more extensively than shown by the filling defect which it produces.

The lesions of the cardiac end of the stomach are definitely inoperable, whether metastasis has or has not taken place. The X-ray examination prevents many useless operations by detecting a growth in the upper third of the stomach; it is of less final value in detecting a growth of the median portion of the stomach as resection depends as far as the stomach is concerned on the skill of the surgeon plus the possibility of metastasis, while resection of the stomach when the growth is confined to the pyloric end or to the lower half, is impossible to the surgeon only because of metastasis. As the likelihood of metastasis seems to increase as does the extent of the tumor. with its age, the earlier a lesion of the stomach is discovered. the greater is the patient's chance for cure. As early cancer of the stomach often causes no more than slight gastric discomfort it is essential in combatting the rising mortality rate of cancer that all persons with any gastric complaint be given early and thorough medical examinations, including an X-ray examination. Propaganda which will bring to the public as well as to the medical profession the necessity of such early examinations is the most hopeful means of raising the operability of cancer of the stomach.

A REPORT ON THE EFFECT OF HIGH CARBO-HYDRATE FEEDING ON THE NAUSEA AND VOMITING OF PREGNANCY: J. W. Duncan and V. Harding, (Canadian Medical Association Journal, December, 1918) approach the general subject of toxemia from a new angle. They study the milder forms, known as "morning sickness," hoping thereby to gain some points which may be of value in the study of the pernicious type. They feel that there is sufficient clinical evidence on hand to warrant the assumption that there is an underlying connection between them.

HISTORICAL REVIEW.—Three types, reflex, neurotic and toxic.

The first or reflex, is rare and uncertain and includes the incarcerated uterus, also the irritations arising from a long cervix, rigid as and new growths.

The neurotic type was supposedly distinguishable from the toxic by the ammonia coefficient but whether this should be high or low does not seem to be settled. The above authors include the neurotic with the toxic feeling that the neurotic element is due to the effect of the toxin on the nervous system.

That the toxin of the toxic type is of placental or fetal origin is a mooted question. The ductless glands enter into the discussion and results have been obtained from the thyroid, placenta, corpus luteum and adrenalin extracts, but failures also.

That intestinal putrefactive products are a factor has been supported by one Dirmoser but there are marked cases on record where this factor did not seem to be operative.

The liver has been blamed. In the cases of this trouble that came to autopsy this organ was found to be the seat of fatty degeneration. Stone found crystals of leucin and tyrosin in the urine and explained it as being due to "sub-oxidation" on account of the liver being unable to properly metabolize the proteids. Others held similar views but Van Slyke and Losee in 1917 did find that eclampsia was distinguished by a low urea nitrogen and that pernicious vomiting was distinguished by a high ammonia coefficient.

Acidosis has been advanced as a cause but Van Slyke and Losee have shown that a depletion of the alkaline reserve takes place only to a very slight degree. There is even in normal pregnancy a slight degree of acidosis and it may be increased in pernicious vomiting but in neither case does it account for the symptoms.

"No satisfactory solution of the problem of nausea and vomiting of the mild or the severe type has been arrived at." Our treatment is indefinite and empirical, symptomatic rather than specific.

GENERAL OUTLINE OF TREATMENT.—While all theories have failed it may be true that there is back of all this toxemia a single causal factor after all.

In view of the fact that the mild forms of this trouble come on in the morning, after a period of starvation, to disappear during the day, and in view of the fact that treatment directed to diet and hygiene, altho rather indefinite, has given results, the authors are of the opinion that there must be present a metabolic factor, and the one most easily disturbed is the carbo hydrate.

Imrie has shown that the growing fetus is hungry or greedy for unsaturated fats. Mottram has shown that in pregnancy of nervous and starved animals there takes place a large deposit of fat in the liver, brought to it from the fat depots of the body. A simple hunger of a few hours led to the same thing.

These factors, pregnancy and a short period of starvation, have been blamed for this condition and the metabolic factor is a temporary lack of glycogen in the liver which leads to a fatty infiltration. This gives rise to acetone bodies in the urine which can be avoided by a liberal carbo-hydrate diet. A fresh over-night specimen must be examined. Lack of glycogen in the liver due to inadequate carbo hydrate diet was the cause.

The immediate source of the glycogen was lactose (cane sugar and glucose were too sweet).

The cure has been proven to be without a psychological influence. The patient was soon put on a liberal mixed carbo hydrate diet with a preponderance of fresh fruit and vegetables, cautioning against the excess of any one dish. Fats must be restricted.

SUMMARY.—

(1) A metabolic factor is the dominant one.

(2) Associated the fatty liver of the pernicious type with the milder forms.

(3) Assuming a temporary lack of carbo hydrates.

(4) Acetone bodies in the urine of all cases.

(5) Supply the deficiency with lactose and later a high carbo hydrate diet.

(6) Treated over 70 cases.

TREATMENT:—**Daily urine** examinations including acetone bodies. **Rest,** from duties, in bed or with isolation, depending on the severity of the case. **Elimination** defects must all be corrected. **Diet,** restricted proteid and fat foods, puch carbo hydrates in the form of lactose, 5% solution, 2 to 3 pints daily by mouth, rectum or subcutaneously, depending on the patient. In mild cases restrict proteids and fats for 48 hours, in severe cases no food at all for 48 hours. The only medication is the lactose as above, by mouth if possible, or by rectum Oz X q hr 4 by catheter, or subcutaneously, under breast, 200 CC.

Return to mouth administration as soon as possible. Lactose may be reduced to 15 Gms daily or tri-weekly if permissible.

Return to a mixed diet (proteid first and later on fats) may be done as soon as nausea and vomiting have ceased.

Examine the urine daily for acetone bodies and lactose. If the latter is found, reduce the intake.

ALBERT G. SHULZE, M. D.

PROPHYLACTIC INOCULATION AGAINST RESPIRATORY INFECTIONS DURING THE PRESENT PANDEMIC OF INFLUENZA; PRELIMINARY REPORT: (Abstracted from the Journal of the American Medical Association, January 4, 1919, p. 31.) By E. C. Rosenow, M.D., Rochester, Minnesota.

Numerous instances have been observed in which protection appeared to be afforded to inoculated members of families of which all the uninoculated became ill. Similar results were obtained when conditions among the inoculated and uninoculated

were comparable, such as in offices, factories and schools, where nearly all were inoculated, or where only a small percentage were inoculated. Illustrating results are as follows:

Of 1,000 persons employed by one company, 481, about one-half, received one inoculation; 224 received two inoculations, and 95 received three inoculations. From October 28th, the date of the first inoculation, to December 8th, 138 cases of influenza occurred, only 20 of which were among persons who had had one or more inoculations. Of these, 14 had had only one inoculation, and the remaining 6 had but two inoculations. There were 13 deaths, only 2 of which followed influenza among the inoculated, and in these two cases only one inoculation had been given.

The mortality from bronchopneumonia in pregnant women has been especially high during the present epidemic. The vaccinations in a fairly large number of such persons appear to have afforded some protection against this complication. The bacteria included in the vaccine belong to the general group in microorganisms associated commonly with chronic infections, such as arthritis, sinusitis and bronchitis; hence some effect should follow its injection. Striking instances of improvement in these conditions have been noted, but whether due to specific or nonspecific effects or whether the vaccine acts as an "exfoliative stimulus" according to Larson, liberating performed specific antibodies, remains to be determined.

From the results obtained thus far, it appears possible to afford a definite degree of protection by prophylactic inoculation to persons against the more serious respiratory infections during the present epidemic of influenza. The duration of immunity is not known, but indications are that it is relatively short.

The vaccine should contain freshly isolated strains of the more important bacteria in approximately the proportions as found in the sputum and lungs in the disease, and since the relative proportions of the bacteria at hand differ so markedly in widely separated communities, judging by the reports, the formula of the vaccine should be made to conform as nearly as practicable to the respective flora of the disease in the communities in which the vaccine is to be used.

A saline vaccine was used as an emergency measure. Owing to the large number of different bacteria that need to be included and the large doses necessary, a lipovaccine, judging by the recent work of Whitmore, ought to possess definite advantages, since reactions should be less severe, the formation of antibodies more marked, and the resulting immunity more enduring.

I am constantly being asked with regard to the use of the vaccine in treatment. Since the severer complications in influenza, such as pneumonia, do not usually begin until the fourth day or later, the vaccine, if given at the onset of the disease might reasonably be expected to afford some protection. The initial prophylactic dose daily for one, two or three days, provided no unfavorable symptoms occur, is recommended. The results obtained are considered preliminary, and final conclusions can not be drawn at this time. It is indicated that the vaccine used was at least harmless, that a certain degree of protection was afforded, and that prophylactic inoculation against the respiratory infections, so fatal during this epidemic, be studied on a large scale by many according to the principles herein laid down.

THYROID THERAPY IN OPHTHALMIC PRACTICE: Percy Dunn, (Brit. Jour. of Ophth., Vol. 111, No. 1, Jan. 1919) states "The dominant factor emphasizing this suggested treatment is the natural inference that without blood above suspicion in its freedom from toxic influences the eye can not maintain its resistance against pathological reaction; that a tissue of such delicacy and vascularity as that of the ciliary body should exhibit a disproportionate responsiveness to a toxic blood supply is under the circumstances natural. One of the functions of the thyroid is to exercise a protective antitoxic and immunising action defending the body not only against toxic products of its own metabolism but against invasion by disease producing microorganisms and injury by their products. As long as the protective influence is maintained pathological reaction is held in abeyance. As soon as that protection fails reactionary processes ensue. The iridocyclitis of pyorrhoeal origin is a symptom, not a disease sui generis and the determining cause of its incidence is failure of the thyroid to control the toxaemia of which the sepsis is the source.

The author also attributes keratitis punctata to a similiar cause, and while it is recognized that inflammatory conditions are due to toxaemic influences, failure of the thyroid to control the toxaemia is overlooked.

An ill functioning thyroid determines the virulence of a toxaemia and its effects. Where that control has failed it must follow that the micro-organism is enabled to exert the maximum of its powers and especially amid tissues defenceless from perverted nutrition. As evidence and for argument corneal ulcer is used. Here the toxin passes through Descements membrane into the anterior chamber, acts as an irritant, and exudation of polymorphonuclear cells is the result and the incidence of the hypopyon is the reflex of the virulence of the infection.

During the menopause thyroid function is deficient and many patients with anomalous eye symptoms come under the notice of the ophthalmic surgeon with conditions such as aching eyes, headache, fatigue in eyes after short period of reading and close work. Although general signs of hypo-thyroidism are not definite, refractive errors are not releaved by correction. The proof is furnished by the relief obtained from thyroid treatment.

Another sign of thyroid inadequacy is hemorrhage. There is the common form of sub-conjunctival hemorrhage occuring in middle aged women and attributed to other caused like retinal hemorrhages. A recurring subconjunctival hemorrhage pointing to hypothyroidism should be accepted as a warning sign of a condition de-

manding thyroid treatment in order to avert the contingency of the retina becoming the seat of the axtravasation.

In concluding the author states "The tendency more or less prevails to regard advocates of thyroid treatment as persons who take pot shots at disease with thyroid tablets and who when succeeding occasionally in scoring a bullseye persuade themselves that a thyroid target is the only one at which to aim."

It should be borne in mind that the literature of the subject has now assumed massive proportions and is soundly based upon physiological inquiry and research. That literature has shown that the thyroid is the out post of the defensive organic army of healthy nutrition. Finally if thyroid therapy fails to yield the miracles expected of it after due trial that is proof that the gland is in no need of assistance.

GEORGE C. DITTMAN.

BOOK REVIEWS

THE WHOLE TRUTH ABOUT ALCOHOL. G. E. Flint. The Macmillan Co., New York, 1919. $4.00.

G. E. Flint in his book, "The Whole Truth About Alcohol," raises protest against the exaggerated statements, untruths, and half truths from which false inferences can be drawn, used by a large number of prohibitionists in their ardent fight for prohibition. He admits that alcohol in excess is a grave evil and believes that as such it should be fought, but that alcohol in small quantities is not only harmless but actually may be beneficial to mankind.

It is his opinion that at the present time, because of our strenuous daily life, man needs some sedative; reasoning the least harmful sedatives to be alcohol and tobacco he concludes that these should not be denied, in fact that, in the best interests of the health of the individual, they should be allowed because through allaying anxiety and worry they ward off disease, one great cause of ill health being worry.

National temperance, rather than national prohibition the author suggests as a solution to the liquor problem. He is in favor of laws prohibiting the sale of liquors containing a high percentage of alcohol (they being habit-forming) and suggests taxing liquors in direct proportion to their alcoholic content thus stimulating the use of mild drinks.

Prohibition he does not consider an effective remedy. He quotes statistics showing that, denied alcohol as a sedative, men seek other and more harmful sedatives, as already suggested, or through private distillation, or illicit trade in distilled liquors, evade the law, creating a contempt for law as well as indulging in liquor of high alcoholic content, the mild malt liquors being too bulky to handle and too difficult to manufacture secretly.

With existing laws drastically applied Mr. Flint thinks the need for prohibition as set forth by prohibitionists would vanish. American people already show a strong drift toward temperance shifting from strong to milder drinks in their own interest, as, due to the complexity of American life, the man who drinks to excess is necessarily eliminated. The man who drinks excessively is abnormal—deficient; alcohol does not produce his deficiency but because of his deficiency he abuses alcohol, Mr. Flint reasons. Prohibition for all because of a few defectives hardly seems fair to Mr. Flint. Effective means of hastening national temperance could be found in providing better living conditions and shorter hours of work as it has been shown that men drink more when exhausted; in rigidly enforcing existing laws; in providing "beer gardens" in which whole families can congregate to take the place of the saloon and in developing habits of moderation in all things.

The deterioration of the race for which alcohol is so often blamed Mr. Flint asserts is due rather to the lack of proper exercise than to the use of alcohol.

While one can not agree with all of Mr. Flint's statements one can not help but be interested in his sincerity, and his freedom of expression, nor be amused at his picturesque use of the English language.

I am sorry that he did not quote more frequently some of our most eminent physiological chemists whose evidence is difficult to meet rather than refute the statements of rabid prohibitionists of whose methods no sincere reformer approves and by whose statements none but the ignorant are affected.

But enough of criticism, the book has a broadening effect in presenting "the other side" sincerely and logically and should have an interesting effect in aiding in the neutralization of fanaticism on the liquor question.

ALMA SCHMIDT.

THE BLIND. Harry Best, Ph. D. The MacMillan Co., New York. $4.00.

The author in his inquiry in respect to the blind in the United States has left nothing undone to make his treatise most comprehensive from every point of treatment. Of particular interest is the chapter devoted to the definition of a blind person, and the general attitude of the law towards the blind discovered in constitutional provisions, legislative enactments and judicial decisions.

That the blind may occupy a useful position in the economical world may be seen from the following facts. Four-fifths of these unfortunates are gainfully employed in agriculture and kindred occupations, manufacturing and mechanical industries, trade and professional service. Practically one-fourth are reported in agriculture and like occupations, a little less than nearly one-fourth in manufacturing and mechanical industries nearly

one-fifth in trade, in domestic and personal service a little less than one-twelfth.

In the census of 1910 there were reported 29,242 cases of blindness. Unfortunately only a little more than one-half are reported as arising from a definite cause so that such statistics are in this respect only of approximate value. Nevertheless cataract holds a most important position as a numerical factor in the causation of blindness (11.2 per cent), optic atrophy from various causes is next (6.2 per cent). Following with smaller proportions are glaucoma (3.4 per cent), ophthalmia neonatorum (2.0 per cent), trachoma (1.5 per cent) and corneal ulcer (0.8 per cent), injuries of the eye of a traumatic nature tops the list with (13.5 per cent).

Considerable space is devoted to educational advantages obtainable by the blind. Compensation for loss of vision is treated at length under the following chapters: "Pensions for the Blind," "Indemnities Paid for the Loss of Sight: Through Suits at Law," "Indemnities Paid for the Loss of Sight: Through Insurance Policies," "Indemnities Paid for the Loss of Sight: Through Public Measures," "Indemnities Paid for the Loss of Sight: Through Workingmen's Compensation Laws" and Provisions by the National Government for Persons Blinded in War.

Paul D. Berrisford.

SEX AND SEX WORSHIP. (PHALLIC WORSHIP). (O. A. Wall, M. D. Ph. G., Ph. M. Published by C. V. Mosby Co., St. Louis. Price $7.50)

The purpose of Dr. Wall's book is probably best expressed in extracts from the book itself:

"There is nothing in the human economy of which men and women should know more, and of which they know less, than of sexual relationship. Ignorance is not bliss. It is the source of unhappiness, suffering. crime, vice and sorrow without end.

The light of knowledge illuminating this subject would elevate the present sensual and impure conceptions of the relationship of the sexes into an appreciation of the real God-like holiness and purity of married companionship and it would go far toward checking immorality and prostitution."

To accomplish his purpose, Dr. Wall gives a discussion of the evolution of man and of the influence of sex on man's development physically, intellectually, ethically and spiritually. He emphasizes throughout the book the essential purity of sex, of sexual emotions and desires. Dr. Wall bewails Puritanical tendencies which denounce all nude in art and which develop a false sense of modesty by suggesting evil in things that are in themselves innocent. "Nudity" he asserts "does away with prurient desires;" it is the straining to conceal the beautiful nude which injures. "Frigidly chaste wives are the main cause of the prostitution that is inseparable from a monogamic life and civilization and civilized clothing."

It was natural for primitive man to worship sex, as Nature held for him no greater mystery than the mystery of birth and the origin of life. Among almost all primitive peoples the first religion took the form of sex worship, often in the form of ancestor worship. Dr. Wall traces the development of higher forms of religion showing the influence of sex worship upon them and showing how the conception of God became more nearly ideal as civilization advanced. In all forms of religion we find the expression of gratitude toward the Creator and God is still spoken of as, "The Father."

One of the most interesting phases of the book is a discussion of the relation of sex to the status of woman. Due to man's superior physical strength, woman was originally considered the inferior being. While the sex organs of woman were worshiped to some extent, the man was usually considered the "creator;"—the woman's part in reproduction was not understood. Anaxagoras, in 1732 B. C., taught that the embryo was formed entirely from the seed of the male and that the mother merely furnished the soil in which it grew and developed. This was also the attitude of many religions was taught even in the Old Testament and held from about 1732 B. C. to the beginning of the 19th century, a period of 4 000 years.

The almost universal subjection of woman while unfair to the woman was a great factor in the development of civilization. It produced the gentler traits in the woman which, transmitted by heredity, raised the standards of civilization—it subdued the passions of the female producing that sexual apathy in woman which is the chief guardian of morality; it developed dread of violence and opened the way for the development of the gentler arts and religion. Due to the development of science woman is now regarded as actually a higher manifestation of animal life than man. Her position has correspondingly changed. The realization of the equality of woman with man will make possible the development of love in its highest and purest sense and the ideal relationship of the sexes will develop.

Dr. Wall states the facts of sex and of the relationship of the sexes in a clear concise and scientific manner. Honesty in facing the truth and knowing the truth is the silent plea throughout Dr. Wall's book. Open-mindedness and willingness to lay aside ancient prejudices and superstitions are necessary if we wish to keep abreast with the times and pave the way for future development.

"No one can tell all the benefits that will accrue to mankind, but two conditions are clearly foreshadowed—the equality of man and woman and freedom of thought and conscience. To take our parts intelligently in the further development of mankind, men and women must 'DARE TO KNOW' ".

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ORIGINAL ARTICLES

SURGICAL TREATMENT OF JACKSONIAN EPILEPSY*

By Robert Earl, M. D., F. A. C. S.
St. Paul, Minn.

Jacksonian Epilepsy is a symptom complex which manifests itself in various diseases of the brain and its envelopes. It is therefore caused by a number of etiologic factors.

While every epileptic attack is believed to originate in the cerebral cortex, the typical Jacksonian seizure must be looked upon as a special form. What concerns us here are the clonic spasms which are known to have their exclusive origin in the motor area of the cortex. The spasms follow the precise anatomic arrangement of the cortical centres, effecting first one, then the other, and so on in rotation. In some cases the other side of the body manifests convulsive movements which finally become general.

Only one-half of the body is usually involved in the spasms; sometimes only one limb, or even only a part of an extremity. For instance, if the spasms commence in the face, the next part effected will be the upper, then the lower extremity on the same side. The spasms may cease after occuring in the limb only. If the entire lateral half of the body be implicated the convulsive movements will, usually encircle the patient, by attacking the lower extremity on the opposite side, then the upper limb, and finally the face. Sometimes a few twitchings in one limb will be followed by a generalization of the spasms. Consciousness may be retained or lost; the latter is usually the case where the entire body participates in the seizure. In some cases, consciousness is clearly retained in the beginning of the attack, the patient being able to observe his condition.

The typical symptoms of Jacksonian epilepsy are subject to variations. The fits may take other forms than muscular spasms. Petit Mal is a common and sometimes the sole symptom. Attacks of numbness, trembling, aphasia, or of headache may be substituted for convulsive phenomena. In Jacksonian epilepsy the type of fit must be definitely Jacksonian in character. It is necessary that the fit should begin with the same aura or signal symptoms, should pursue the same extension from one group of muscles to another and should leave paretic or weakened the same group of muscles in all attacks.

The course of Jacksonian epilepsy is progressive. The tendency is for the fits to become progressively more frequent and severe and to be coupled with a constantly increasing failure of mental power. In fact, after the disease has existed for a few months or years it may become exactly similar to the Grand Mal of essential epilepsy, with the possible exception that the fits may continue to begin as a localized spasm.

Some believe that there is an underlying organic cause in all forms of epilepsy even the essential type. The epilepsy due to a focal irritation is sometimes found to simulate the essential type of convulsion; and on the other hand, the essential form, that is those cases in which at post-mortem examination no lesion is found, is sometimes observed to cause convulsions of the Jacksonian type. Although the two types more or less merge, they must, from a surgical standpoint, be kept separate, because surgery will have much to do with the Jacksonian type and little to do with the essential form.

*Presidents Address to the Ramsey County Medical Society.

The most frequent cause of the organic lesion is probably trauma including those injuries which occur at birth, the effect of which is to produce at their time of infliction meningeal hemorrhages and cortical lacerations. Birth or subsequent accidental injuries result in hemorrhage, brain laceration, depressed fractures, spicula of bone penetrating the brain tissue, hyperostosis or thickening of the duramater. These various injuries may result in cyst formation, brain softening, meningeal adhesions, localized edema, or scars. While these lesions are usually situated upon the cortex and lepto-meninges, they may sometimes be found within the cerebral substance.

Dr. W. A. Jones has recently reported in the J. A. M. A., three cases of epilepsy with focal symptoms following history of injury in each of which operation, demonstrated a localized cerebral edema, probably caused by injury or inflammation of the lymph and blood channels in the neighborhood. These cases were all relieved by decompression and scarification of the membranes.

Patches of encephalitis resulting from infection, tumors, hydrocephalus, edema, and abscess, are also causes. As has been stated before, there are cases of typical Jacksonian epilepsy in which no focal lesion can be found. This has taught us to be careful of advising operative interference, unless at least some slight motor weakness in the group of muscles follows the attacks. Blows on the head in falls or other ways are not uncommonly followed by the disease. Syphilis must be excluded. The fits may ensue almost immediately or may be separated from the occurence of the original injury by a period often varying from months to years. Why some lesions in or overlying the cortex should produce convulsive attacks in some cases and not in others is a problem which can only be explained on the ground that there is a susceptibility of soil for focal epilepsy in some patients and not in others.

Admitting that some cases of Jacksonian epilepsy remain stationary and in a few the fits may cease altogether, either through the use of drugs or spontaneously, the outlook without the help of surgery is practically hopeless. Although operations with removal of the source of cortical irritation have been the means of curing some of these unfortunates and lessening the severity and frequency of attacks in others, the operative results have not been particularly brilliant. It therefor behooves us to be constantly mindful of the fact that in this condition as in many others, an ounce of prevention is worth a pound of cure.

In all head injuries in which there is evidence of fracture, depression, hemorrhage, foreign bodies, or severe edema; the brain should be thoroughly exposed, depressed bone elevated, bone spicula, blood clots or foreign bodies removed, and drainage provided for edema, so the brain will be irritated for as short a time as possible, thereby avoiding a possible future epilepsy.

As illustration of what immediate surgical treatment will accomplish wish to cite one case, namely, L. D., age 18 months, referred by Dr. Gratzek and Dr. Ball. The patient was perfectly well until he fell out of the second story window of his home, striking on his head, August 11, 1916. He was unconscious the first twenty-four hours following the injury. After regaining consciousness it was found that he had paralysis of the right arm and leg, more marked in the leg. The child developed paralysis and Jacksonian epilepsy. When I saw the child five days after the injury, he was having convulsions in the right arm and right side of face, separately, also occasional general convulsions. Physical examination was negative except for right sided paralysis and bruise on the left side of his head. There was a question if crepitation could be felt. X-ray demonstrated a linear fracture extending from the left mastoid process up over the vertex. Neurological examination by Dr. Ball showed that the child paid no attention to the examination or surroundings. Deep reflexes were equal. Babinski present on right side sensation apparently unaffected. We did a left subtemporal decompression on August 16th, which was the 5th day after the injury, and found the skull fractured with a blood clot between the bone and dura, in addition to which there was a subdural clot about three inches in diameter over the motor area. The brain was so edematous that it protruded into the wound to such an extent that I in-

serted a needle into the venticle and drew off some cerebro spinal fluid in an effort to reduce the size of the brain so as to better cover it with the temporal muscle, but only succeeded in drawing the scalp together over the brain and suturing it with interrupted silk worm sutures. Drained lower angle of wound for three days. The child made a rapid uneventful and complete recovery, and has not had any convulsions since the operation. Although two and one half years is not a very long time, I am sure that without this operation the subsequent history of the paralysis and Jacksonian epilepsy would have been most unsatisfactory.

As to the frequency with which skull injuries are followed by elipesy, I quote Allen, who states that out of 167 skull injuries during the Civil War, 13.7 per cent developed epilepsy. And in the Franco-Prussian War out of 571 skull injuries that recovered, 4.3 per cent developed epilepsy, but if we add to this the cases with periodic attacks of dizziness, numbness, and trembling, the percentage is increased to 26.7.

After having made a diagnosis of Jacksonian epilepsy the patient should be carefully studied and any physical diatetic, emotional, or faulty habits corrected so the patient may be built up to the highest possible standard of physical efficiency. During this time a thorough course of bromides, iodides, and mercury should be tried. If this so-called medical treatment does not effect a cure, operation should not be delayed because the longer epilepsy has existed, the greater likelihood there is of developing what is known as "the epileptic habit." In long standing cases even after successful removal of some lesion to which the epilepsy can be definitely attributed the symptoms may persist because of an established "epileptic habit."

On examining patients with Jacksonian epilepsy there may be present the scar or even a depression of a part of the skull at the original point of injury. The scar is usually not tender and pressure upon it does not cause a fit. In these cases we must remember that the evident external point of injury may not correspond with the focal brain irritation as the injury may have been received in such a way as to cause fracture, hemmorrhage, or even brain laceration, distant to the external point of injury. Therefore in operations to relieve the cause of focal irritation we must expose the brain over the region of the cortex which supplies the particular muscles in which the spasms begin instead of being guided by a scar or depression in the bone. In other words cerebral localization should be our guide in operating to remove focal lesions causing Jacksonian epilepsy.

In the group of typical Jacksonian cases in which there is no demonstrable organic lesion, Horsley, over thirty years ago, proposed that the center corresponding to the group of muscles in which the fits occured should be determined by faradism and that this center should be excised down to the white matter. Even though the cortex should not be the place from which the motor discharge starts but is only an important relay station in the reflex arc, the excision of the ganglonic cells will break the chain.

In this type of case, electrical irritation is the only method of exact cerebral localization applicable to human beings. All other methods such as determination of points on the exterior of the shaved skull or localization according to convolutions or sulci are not sufficiently reliable for exact localization.

As is well known, the sulci of the living brain cannot be as clearly defined as those in the cadaver, because we dare not remove the pia, only after the removal of which the outline of the sulci appear with distinctness.

A faradic battery with reliable current control is preferred and only the weakest currents should be used. A current which imparts only a mild sensation to the finger tips and fibrilliary twitchings or a mild sensation to the tongue, is usually of sufficient strength to cause the desired muscular contractions. In some cases in which the pia-mater is thickened, stronger currents may be used.

It is of great moment for our electric stimulations to eliminate all possible conditions offering resistance to the penetration of the current. Above all, it is of paramount importance to eliminate oedematous conditions of the arachnoid membrane. If such be present, before proceeding to irritate the cortex under such circumstances the arachnoid should

be scarified, taking care not to injure the blood vessels or the pia. The subarachnoid fluid will then be seen to trickle away, this may be enhanced by a gentle pressure with a sponge. The results obtained from faradic stimulation of cortices, the coverings of which evince pathologic conditions, such as chronic inflammatory states, scars, thickenings of the arachnoid along the course of blood-vessels, etc., besides being technically difficult, are very uncertain. The strength of current required under these circumstances is proportionate to the resistance offered by the tissues intervening between the electrode and the brain substance proper. The stronger currents carry with them the danger of undesirable stimulations of contiguous cortex tissue. Only partial anasthesia should be resorted to in cerebral faridizations. Complete narcosis paralyzes the cortex. I have at times permitted patients to awaken during the proceedure.

During the electrical stimulation of the cortex, three nurses watch for muscular contraction. One inspects the face, the second, the upper part of the trunk and upper extremities, the third, the lower part of the trunk and the lower extremities.

The electrode and cords should be boiled so they may be easily handled without infecting the wound. The other pole distributes its current through a large flat electrode, which is moistened in salt solution and applied to some surface of the trunk or extremities.

We should never use a stronger current than necessary or a weak current over too great a length of time, as this may cause increased shock and collapse. Moreover, the cortex sooner or later loses its irritability to the faradic current, becoming fatigued or exhausted and fails to respond.

The prognosis for focal epilepsy, although better than that for the idopathic group, is still far from what we would wish. Many reports of cures have come out too early, here as well as in genuine epilepsy, several years of freedom from seizures should pass before we declare the patient restored. In the traumatic cases the earlier the operative interference after the first focal attack, the more hopeful is the prognosis.

As operative interference with removal of the focal pathological lesion offers about the only hope of cure in Jacksonian epilepsy, these cases should be given the benefit of an operation, even though the attacks are not completely and permanently stopped by the operation, they are usually lessened in severity and their interval prolonged, provided the operation discloses some lesion which can be removed.

Cases which owe their origin to the irritation of a new growth are usually cured by its removal even though the brain and meninges are damaged by the proceedure, leaving a large defect which must be healed by cicatrization.

Starr has called attention to the fact that Jacksonian epilepsy may be the only symptom of a new growth arising near the central fissure and gives this as one reason why all cases of focal epilepsy should be explored upon the first definite appearance of the symptoms; for this offers the chance of discovering at an early and removable stage a tumor which otherwise would in time prove fatal.

It is essential in operating to make a bone flap of sufficient size to expose the entire Rolandic area so as to afford ample room for investigation and possible electric stimulation. Depressed fractures or depressed spicula are positive indications for operation and are often followed by relief of the symptoms.

In cases of compound fracture with loss of part of the skull or depressed fractures with removal of part of the skull leaving bone defects followed by Jacksonian epilepsy in groups of muscles whose nerve centres correspond to the point of cranial deficiency, it is supposed by many that closure of this defect would have a curative effect. Hence, silver or celluloid plates, bone flaps, bone transplants, etc., have been used to cover these cranial defects. In my opinion an enlargement of these bony openings with exploration of the edges and removal of possible depressed bone would be more beneficial than the securing of a firm closure of the bony opening. In these cases if no bony irritation is found, the irritation is usually due to scar tissue binding together the cortex meninges, scalp and skull in firm adhesions, the loosening up of

which and the transplanting of a fat fisial transplant from the thigh would protect the brain from recurring adhesions and thus effect a cure. We often see in cranial defects that the defect in itself has no deleterous consequences.

It is more than likely that the defect acts as an equalizing valve permitting the equalization of the intracranial pressure caused by variations in the size of the brain due to cardiac and respiratory waves. In any event it is more than probable that the focal irritation is due to depressed bone, cyst, adhesions, or scar tissue formations, and not to the bony defect.

We must also deal with a group of cases of traumatic Jacksonian epilepsy in which no cranial defect or deformity is demonstrable, but in which a subdural hemorrhage or laceration of the brain tissue with absorption of the clot or healing of the lacerated tissue have left adhesions which prove to be the source of irritation. In these cases if the skull is opened and the adhesions carefully and dryly loosened and the dura carefully resutured there is strong likelihood that they will not reform. The same is true in adhesions caused by meningitis.

When no macroscopic lesion can be found we may search for the epileptogenic center with the aid of the faradic current.

In this way we may locate with exactness the center of the particular group of muscles in which the epileptic contractions start and adjacent route of progression. In some cases when the exact epileptogenic center is touched we produce a typical paroxysm like what had been observed on other occasions. After having outlined the epileptogenic zone we ligate all vessels entering the zone and excise the cortex to a depth of 10 or 12 m. m. If a large area of the cortex is excised we get paralysis of the corresponding groups of muscles which is of temporary duration, the function gradually returns probably being taken up by the corresponding area on the opposite side of the brain. The muscles, however, do not regain quite their former strength and vigor.

The faradic exploration may reveal a subcortical lesion still so small as to be imperceptible to sight or touch which would have been overlooked in the absence of this delicate test.

Doyen reports a case in which he extirpated without having seen it, a glioma, the size of a small pea which lay in the center of the cortical tissue removed after localization by electrification, the recognition of which was only made by microscopic examination.

Dr. Rhoes of Pittsburgh, has recommended the use of the galvano-cautery as being more satisfactory, than the knife in removing a part of the motor area as it causes less bleeding and he believes there is less probability of adhesions forming.

Treatment seldom ends with the operation, for every case should be placed under the most advantageous surroundings and receive close care for several years. Motor depressants should be administered to the majority of the cases for a long time following the operation.

In conclusion, wish to emphasize:

1. As a prophylaxis against the development of Jacksonian epilepsy, all head injuries whether received at birth or subsequently, should receive prompt and adequate surgical treatment.

2. Because all lesions lying over the motor area do not cause Jacksonian epilepsy we must conclude there is a susceptibility of soil in some patients and not in others.

3. Before undertaking operation the so-called medical, dietetic, hygienic, treatment should be given a thorough trial.

4. Although operative results have not been brilliant, the outlook without surgery is practically hopeless.

5. In the cases in which a definite lesion is found and removed a complete cure may be looked for.

6. When no lesion is found the epileptogenic area should be located by electrification and removed.

7. When surgery does not effect a complete cure the attacks are usually lessened in frequency and severity.

8. Operation should be undertaken as soon as the diagnosis is made or time may establish the so-called, "epileptic habit."

THE BLOOD PICTURE IN EXOPHTHALMIC GOITER*

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The present report is based on the study of the blood counts in 578 patients with exophthalmic goiter who were examined in the Mayo Clinic during the years 1912 and 1913. To obtain the mortality statistics a larger series of cases was studied and individual investigations were made of those cases which showed marked variations from the average. The count from the entire group is as follows:

Hemoglobin	83.1%
Erythrocytes	4,790,000
Leukocytes	6,973.5
Polymorphonuclears (relative)	58.3
Polymorphonuclears (absolute)	4,065.5
Small lymphocytes (relative)	34.8
Small lymphocytes (absolute)	2,426.7
Large lymphocytes	4.4
Transitionals	1.1
Eosinophiles	1.6
Basophiles	0.49

The figures above the differential count are well within normal limits. There is a relative and an absolute mononucleosis and a percentage decrease in the polymorphonuclear neutrophiles. The eosinophils are slightly under the normal average. We found that the hemoglobin was below 70 per cent in only 13 (2.2 per cent) of the 578 patients. The average for this group is 62 per cent, while 44 is the lowest individual percentage. Considering the degree of organ degeneration frequently present in this disease, there are surprisingly few patients with even a low grade anemia. The divergence from the normal in the numerical relationship between neutrophilic and small lymphocytic cells was studied as follows: The twenty-five counts having the least number of leukocytes and the twenty-five having the greatest number were placed in separate columns. The average for the first group are:

Leukocytes	3364
Polymorphonuclears (relative)	50.9
Polymorphonuclears (absolute)	1712.3
Small lymphocytes (relative)	42.7
Small lymphocytes (absolute)	1436.4

If 1,500 is taken to represent the normal total small lymphocyte count it will be found that in spite of a marked leukopenia the absolute count will still be within normal limits. On the other hand, the total number of neutrophils has been reduced to 1712.3 or over 3,000 less than the normal average. These numbers show that when a leukopenia is present in cases of exophthalmic goitre, it is the result of a decrease in the total number of polymorphonuclear neutrophiles. The averages in the second group are:

Leukocytes	12,872
Polymorphonuclears (relative)	66.6
Polymorphonuclears (absolute)	8,572.7
Small lymphocytes (relative)	27
Small lymphocytes (absolute)	3,475.4

These figures show the same relationship between neutrophiles and small lymphocytes, but to a lesser degree. In other words, the higher the total white count, the less the divergence from normal in the individual relative counts. These patients gave no evidence of having an acute infection at the time the blood was examined.

The two questions which confronted us were: First, what are the factors which determine these variations, and second, what is their diagnostic and prognostic significance.

It was natural to assume that the early cases would show a lymphocyte count more nearly normal. Four hundred eighty cases in which the patients had had symptoms for twenty-four months or less were arranged into twelve groups. In the first were placed the counts of those patients who had noticed symptoms for two months or less; in the second those who had had symptoms for from two to four months, and so on in two month intervals up to twenty-four months, which represented the twelfth group. The first group gave averages as follows:

Leukocytes	6,179.7
Small lymphocytes (relative)	34.3

In the twelfth, in which the symptoms had continued from twenty-two to twenty-four months, the averages were:

Leukocytes	7,051.7
Small lymphocytes (relative)	34.7

It is unnecessary to give the averages for the intervening groups as the counts are

*Presented before the Minnesota State Medical Association, Aug. 29-30, 1918, Duluth, Minn.

parallel to those given. Although there are not so many leukocytes in Group I as there are in Group XII, this fact has no significance in the light of a detailed study of the entire series. There is nothing to show that the duration of symptoms bears any relationship to the degree of lymphocytosis.

It would seem that the degree of lymphocytosis should be directly proportional to the severity of the symptoms. We tried to prove this by regrouping the blood counts from several angles. The counts from the patients whose symptoms were marked, and were recorded as showing a present severity of $3\frac{1}{2}$ or 4 on a basis of 1 to 4, were averaged separately with the following results:

Leukocytes	6,400
Small lymphocytes (relative)	34.9

The variation from the total averages is very slight. We also studied the case histories of the patients having lymphocyte percentage below 20, and those having a percentage above 45 but were unable to show that either group represents a greater degree of hyperthyroidism than the other.

As the patients who died, either following surgical interference or otherwise, on the whole suffered a high degree of hyperthyroidism, their counts were averaged. From 1,909 to 1914, inclusive, there were 54 surgical and non-surgical deaths among the patients having had complete blood examinations. The averages were:

Leukocytes	7,320.9
Small lymphocytes (relative)	31.3

To eliminate from this group, as far as possible, all patients except those dying of acute hyperthyroidism, we excluded those having had complications such as pneumonia, acute nephritis, etc., and obtained the following averages:

Leukocytes	7,917
Small lymphocytes (relative)	32

We find from these studies that neither the leukocyte count nor the degree of mononucleosis is dependent on the severity of the symptoms and that they can not be used as a guide in prognosis.

In 83 patients who had cardiac dilation of one inch or more to the left, the averages were:

Leukocytes	6,730.7
Small lymphocytes (relative)	35.2

and in the patients who had cardiac edema there were:

Leukocytes	6,309
Small lymphocytes	36.3

Evidently the characteristic picture is not influenced by cardiac damage.

Seventy-four counts made from one to three weeks after thyroidectomy showed the following averages:

Leukcocytes	8,633
Small lymphocytes	34.5

Except for slight increase in the number of leukocytes, which may be accounted for by the recent operation, no variation is shown; also except for the leukocytosis which may be present the first few days following operation, thyrodectomy does not influence the blood picture during the first three weeks following operation.

Averages show that neither sex nor age affects the degree of mononucleosis.

During long periods, patients suffering from hyperthyroidism have abnormal appetites, but, on the other hand, for days or weeks they may eat less than normal. As digestion often influences the leukocyte formula, forty patients were examined with reference to the bearing this might have on the blood count. In each instance the blood was taken before breakfast and again about two hours after a heavy meal; there was no material change in the relative counts.

That the average percentage of small lymphocytes is well above normal, would indicate that at least the count is of some diagnostic value. In this connection it may be noted that of the 578 patients examined, 5 had a relative count of 15 or below; 39 had a relative count of from 15 to 20; 169 had a relative count of from 20 to 30; 212 had a relative count of from 30 to 40, and 162 had a relative count above 40. Only 7.5 per cent had a small lymphocyte count of 20 or below. It will be seen that a count below 20 is of some negative value while one above 40 is of positive value. Intermediate readings are of less significance because of the wide fluctuation among normal counts.

Conclusions

Although some writers still maintain that anemia of the chlorotic type is a characteristic of the disease, this is neither borne out by our findings nor by those published by Kocher. An anemia, when present, is neither the result of, nor necessarily conicident with, hyperthyroidism, but is due to secondary changes. Kocher has emphasized the presence of a leukopenia and has based his conclusions on 106 cases in which there was an average count of about 5,000 leukocytes. Our series had an average of 6,973.5, and it would seem that the real status in regard to the number of leukocytes in patients with exophthalmic goiter is that there is a wider variation, probably dependent on the neutrophiles, than among normal counts, and while there are more counts showing a decrease in leukocytes there is an equally large number showing a slight increase. We have not been able to demonstrate that a leukopenia is more frequently present in the early stages of the disease.

We agree with Kocher and others who have confirmed his work that in the majority of the cases there is a relative and absolute nononucleosis; and that when a leukopenia is present the decrease takes place at the expense of the neutrophiles; we have also found that the converse is true to a lesser degree. The eosinophiles show some variation, but the total averages give no increase. In our mortality statistics the relative lymphocyte count is a few points under the average for the entire series but it is not sufficient to be of value in prognosis. The differential count is of limited value in diagnosis. Except for a polymorphonuclear leukocytosis immediately following operation, and during tonsilitis and other acute infections, we have been unable to determine any factor which influences the characteristic blood picture. There are two points that may explain our inability to determine the influences which sway the count:

1. There is much to indicate that the changes in the leukocyte formula are owing to two more or less independent variables, one which causes a lymphocytosis and another which influences the neutrophilic count. The first may be found in a hyperplasia of the lymphoid tissues, and the second, as Falta has pointed out, in a fluctuating abnormal distribution of the neutrophils in the vascular tree.

2. Until recently we have not determined the metabolic rate and as a result there have been errors in marking the degree of hyperthyroidism. Much may be gained, especially in individual cases with their varying rates, by examining the blood coincident with the metabolic readings and pulse pressures.

PRINCIPLES OF FOREIGN PROTEIN THERAPY*

W. P. Larson, M. D.,
Minneapolis, Minn.

During the past two or three years we have heard more or less about foreign protein therapy. Numerous cases have been reported in which a vaccine or a protein entirely foreign to the infectious agent has improved or cured the infection. In fact, there are medical men today who are beginning to doubt the principle of specific therapy and are inclined to the belief that an infectious condition will improve under nonspecific vaccine therapy just as readily—sometimes more so—as when specific therapy is strictly followed.

It is a fact well known to all practitioners that a chronic infection of long standing will sometimes completely disappear as a result of the incidence of some other infection, such as typhoid fever, erysipelas, etc. Quite recently a case came to my attention of the complete disappearance of a condition of eczema of long standing following the administration of typhoid vaccine. During the past year Cross reported favorable results from treating chronic arthritis with typhoid vaccine. As it is a well established fact that most cases of arthritis are caused by streptococci, the work of Cross would seem to prove beyond question that some infections at least are benefited by an antigen which bears no relation to the infectious agent.

Up to the time of this piece of work the writer had been inclined to ignore the work on foreign protein therapy as it seemed impossible upon superficial examination to correlate this with our well established views re-

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garding specific therapeutics. No one will question the assertion that typhoid vaccine will never stimulate the production of antibodies against any other micro-organism than the typhoid bacillus; neither will the streptococcus, staphylococcus, egg white, serum, or any other protein produce antibodies against anything except themselves when injected into a healthy animal.

How is it, then, that such favorable results may be obtained in some cases where nonspecific vaccines have been used? This was the question that presented itself something like a year ago and which one of our students, Mr. Herrmann, undertook to investigate.

In the investigation of any problem it is imperative to have some working hypothesis. While true that such hypotheses are modified more or less during the course of investigation according to the results obtained, they nevertheless serve a temporary expediency. Therefore, before proceeding further with this paper, I will briefly outline our conception of the possible mechanism operative in the beneficial results of foreign protein therapy. According to Ehrlich two antigenic stimuli are necessary in bringing about antibody production. One stimulus causes the tissue cell to produce the antibodies but, as was shown by Bruck, a second stimulus was necessary to cause the cell to throw off these antibodies into the blood stream. As the experiment of Bruck is so fundamental and so pertinent to the question occupying our attention at this moment, it may be well to cite it very briefly. In immunizing an animal with tetanus toxoid (that is, tetanus toxine that has been heated at 60 degrees in order to destroy its toxicity) it was found that the cells received the stimulus necessary for the immune body production, but that these antibodies were not thrown off into the blood stream unless the unheated toxine were given, showing conclusively that antibody production is dependent upon one stimulus while an entirely different stimulus is necessary to cause the cells to throw them into the blood stream, i. e. specific and exfoliative stimuli.

One point I wish to emphasize here is that an antibody is not only valueless but positively a liability so long as it remains sessile, that is, as long as it remains associated with the body cells.

Taking this work as the basis of our investigation we proceeded on the theory that many bacteria, such as streptococci, pneumococci, etc., are imperfect antigens corresponding to the heated tetanus toxine, tetanus toxoid; that during a streptococcic infection, such as rheumatism, during the course of the infection antibodies are formed against the streptococci, but as this organism does not possess the second stimulus (exfoliative) that is necessary to cause the antibodies to be thrown off into the blood stream, not sufficient immunity results to cause the infection to subside. This stimulus we believed was provided by the foreign protein: typhoid vaccine, foreign serum, proteoses, etc. To state it in another way, the stimulus necessary to cause the cells to produce antibodies is specific, while the stimulus causing the cells to throw off antibodies is not necessarily specific.

Our work was begun by immunizing rabbits against sheep corpuscles, as hemolysines are readily produced and their quantitative determination can be made very accurately. Anyone who has undertaken investigation on hemolysine production will have observed the variation of different animals in respect to their ability to produce these antibodies. If a series of, say, six animals are immunized, three may produce a serum with a very high lytic titre, one or two a very mediocre serum, and the sixth no antibodies at all. In fact, we have had animals in our laboratory that produced no hemolysine at all, even after months of immunization. In the course of the investigation here recorded it was found that the animals producing the serum of low or mediocre antibody content would often produce a serum of unparalled potency following the injection of a foreign protein, such as typhoid vaccine or ascitic fluid. In other words, these animals had produced antibodies against the blood cells during the process of immunization but failed to respond to the second stimulus. This could then be supplied by such nonspecific substances as those mentioned. Without going into details of these experiments further, suffice it to say that Herrmann found other antibody production, such as opsonines and agglutinines, to be governed by the same laws.

The next logical point to investigate would then seem to be to determine whether or not all the processes of immunization could be accelerated by the injection of some foreign protein. In other words, how would the animals react to foreign protein that had already produced a high antibody titer without the intervention of a foreign protein? The investigation of this problem showed that, where the animal had already responded to the exfoliative stimulus, the antibody titer of its serum could not be augumented by injecting foreign protein. Therefore, we must be led to the conclusion that whether or not the antibodies of an animal under the process of immunization are thrown off into the blood stream depends as much upon the individual as it does upon the stimulus, for some animals, as we have seen, respond promptly to the exfoliative stimulus of the red blood cells, while other animals of the same species and in the same series of experiments fail to respond to the stimulus of the red blood cells but respond promptly to the exfoliative stimulus of some other protein, such as typhoid vaccine, ascitic fluid, etc.

While we do not wish to commit the folly of drawing too far reaching deductions from these experiments, nevertheless we are inclined to believe that the stimulus, which, for the sake of convenience, we have called the exfoliative stimulus, is nonspecific and that where antibodies have been formed which still remain sessile, that is, associated with the cell from which they have been produced, they will be thrown off into the blood stream whenever this exfoliative antigenic stimulus is supplied. This we believe explains quite fully the results obtained by various medical men who have reported favorable results following foreign protein therapy. It furthermore correlates these findings with the unassailable evidence of specificity and will also clear up the irregular results that have been obtained with serum therapy in bacterial infections. At this time medical science is much interested in the serum therapy of pneumonia. While the specific serum is some cases gives most excellent results in the treatment of pneumonia it has been found by others that equally good results may sometimes be obtained with normal horse serum. Is it possible that the serum treatment of pneumonia is nothing other than foreign protein treatment, that the improvement is not due to the immune bodies contained in the horse serum but originates from the infected individual whose antibodies are liberated as the result of the exfoliative stimulus of the horse serum? This question I do not attempt to answer. It is merely raised in passing.

DISCUSSION

DR. E. C. ROSENOW: Dr. Larson's contribution is of fundamental importance, and will help to explain certain well founded observations made by clinicians which heretofore have been considered by immunologists as impossible. A point of particular importance is the fact that foreign proteins call forth a reaction which liberates preformed specific antibodies. It is likely that the beneficial effects in certain diseases following intravenous injections of colloidal metals are due to a similar reaction. There is good reason to believe, moreover, that a specific antigen in the proper dose may also act as an "exfoliative stimulus." The often strikingly good effects observed in chronic streptococcal arthritis following injection of a properly gauged dose of a specific vaccine, would speak in favor of this view.

The good results obtained in the treatment of subacute rheumatic arthritis with partially autolyzed streptococci isolated from the joints in rheumatic fever and in the treatment of pneumonia with huge doses of partially autolyzed pneumococci may be due in part to a similar reaction. A specific antigen which is relatively nontoxic and which acts as an "exfoliative stimulus" would have the additional advantage of stimulating the production of antibodies.

ECTOPIC PREGNANCY*

C. B. Lewis, M. D.,
St. Cloud, Minn.

The diagnosis of Ectopic Pregnancy has been the subject of so many articles in the literature of the past ten years, that it may seem out of place to present this subject for your consideration. The mistakes made by us and in cases we have seen serves to prove that this old subject will be forever new and needs constant consideration to be kept uppermost in our minds while doing more or less of a general practice.

We have had thirty three cases of ectopic gestation in the past ten years, occuring in

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twenty-nine patients. Thirty-one cases were subjected to operation with the loss of two patients or mortality of 6%. Two patients seen were in a dying condition, surviving only one and two hours from the severe hemorrhage and shock.

Amenorrhoea was present to some degree in all cases, varying from one week to two months, but with a usual history of an irregular bleeding after the regular menstrual period had been skipped. It is of especial interest to note that practically all patients stated that although they thought the irregular bleeding after shipping a menstruation was a delayed menstruation due to some form of exposure or cold, on close questioning the blood was not like a regular menstrual flow, but more nearly as a real bleeding. This is an important point and can usually be brought out if the patient's attention is attracted to it. The irregularity and more or less continuous bleeding with some abdominal discomfort or real pain has been observed to have led quite frequently to a mistaken diagnosis, the supposition being, that there was an impending or incomplete abortion. A currettment seems to only exaggerate the condition and lead to the real recognition at a later stage.

Abdominal pain was present in all cases varying from the classical crisis with the following shock from hemorrhage to the more or less continued abdominal distress which brought the patient for examination. The former condition with its clear cut evidence of intraperitoneal hemorrhage is not usually mistaken, but the slow process with its distress from tubal distention or slight rupture is very confusing. One must have constantly in mind the three conditions; of intrauterine pregnancy with threatening abortion; inflammatory tubal disease, expecially hydro and pyosalpinx and extrauterine pregnancy when presented with a case of irregular bleeding and abdominal pain.

The other signs that are usually associated with pregnancy are so frequently absent that I have not found them to be of a great deal of value in arriving at a conclusion as to the real condition. One local symptom which I believe was first pointed out by Brickner of New York is the small elevation of temperature from 99.3 to 102. The range is usually less than found with a suspected inflammatory disease and does not correspond with the local findings. The elevation is due to free blood in the peritoneal cavity after rupture, and to show blood absorption with a localized peritonitis. This symptom was forceably impressed upon me in the following case:

A young unmarried woman of nineteen was brought to the hospital with a history of cramp-like attacks of pain during the previous six days, a small amount of spotting and local tenderness just below the usual appendix area. The history, examination and presence of 102 temperature made it very clear to me that she was suffering from a diseased appendix. Operation showed a typical right ruptured tubal pregnancy which had ruptured some days previously. A number of cases since then have shown this elevation of temperature and the sign has been of great value in making a correct diagnosis.

The examination of the patient has often been very unsatisfactory, first on account of the great tenderness one cannot map out the contents of the pelvis, secondly after a rupture, the typical mass in the region of the broad ligament is missing. The size of the uterus has been found to be less than one would expect from the period of amenorrhoea.

The question of age has been shown in a large series of cases to be any time during the child-bearing period. Our own cases showed a variation from 19 to 40 years, and we have seen cases reported from 17 to 46 years. Other local signs and methods of diagnosis have not been of enough help in our work to be brought out at this time.

Some eight years ago there were two distinct schools in regard to the advisability of operating; the one held that no case should be operated in shock and the other that all cases should be operated as soon as possible. I believe these opinions have given way to the middle road in which a case seen soon after rupture should be operated on at once, and the later cases given time to begin recovery before operation. In only one case was the diagnosis made and operation instituted before rupture of the sac. One case was of the interstitial variety and of especial interest, because it taught how the proximal end of the tube should be handled. Mrs. C. H., 29 years of age, was

operated on January 31st, 1914, for a typical right ruptured tubal pregnancy. The tube was cut off square at about the junction with uterus. The broad ligament folded after removal of the tube bringing the ovary in close proximity to the severed tube. On July 22nd, of the following year, a period of 18 months, she was brought in again with unmistakable signs of a right tubal pregnancy. Her record showed that she had had the right tube removed and we believed that we must be mistaken in thinking the right side was again involved. On opening the abdomen there was still bleeding from the rupture of the interstitial part of the tube where the pregnancy had taken place. Since that time, we have invariably cut out the tube in a 'V' block and sutured the cut surfaces of the uterus. Four cases have been operated upon twice. The one already noted in which the same side was involved on two different occasions, in the last operation the left tube was removed. Mrs. J. K. was operated upon for a left tubal pregnancy July 8th, 1909, and for a right on March 29th, 1913. Mrs. T. R. was operated upon for a left tubal pregnancy July 15th, 1914, and for a right on September 28th, 1917. Mrs. W. G. was operated upon for a right tubal pregnancy on October 13th, 1913, and for a left on March 19th, 1918.

In none of the above cases was there a normal pregnancy or an abortion intervening, and the period between gestations varied from 18 months to $4\frac{1}{2}$ years.

Our limited experience in this field has shown us that Ectopic Gestation must be constantly born in mind and the frequent atypical presentation of symptoms carefully grouped and differentiated in order to arrive at a correct diagnosis.

DISCUSSION

DR. ARCHIBALD MACLAREN, St. Paul: I understood Dr. Lewis to say that he had seen these cases of ectopic pregnancy die without operation. A great many years ago some gynecological surgeons of national reputation took the position that these cases never died unless they were operated upon, but that has not proven to be so from my own experience. I have seen at least three or four patients die without any operation, where post-mortem examinations have proven that the deaths were due to ruptured extrauterine gestations.

In extrauterine pregnancy you either have a tubal rupture or you have a tubal abortion, or very rarely the woman goes on to a full term abdominal pregnancy. Rupture of the tube takes place in a large proportion of cases. Possibly a third or fourth of the cases of extrauterine pregnancy result in tubal abortion. Tubal abortion to me is much like intrauterine abortion, and in many of these cases the necessity for the removal of the tubes has passed at the time of the exploratory laparotomy because the bleeding has stopped after the expulsion of the foetus and membranes. You say this patient is going to have this condition occur again; that might be possible. Statistics rather prove that a woman who has had one extrauterine pregnancy is apt to have it again, but there are many cases where women have had extrauterine pregnancy and then later normal deliveries, and some women will risk their lives to bear children, so that I do not think we have a right to remove the tube just because the woman has had tubal abortion. On two different occasions I have opened the tube, cleaned it out as you would the aborting uterus, stitched up the tube, and the woman have gone on to ultimate recovery and never had subsequent extrauterine pregnancy.

DR. C. B. LENONT, Virginia: I believe that every case of extrauterine pregnancy should be operated on as soon as a surgical diagnosis of the condition is made. In my limited experience the only patient I lost was one on whom I failed to operate because we thought the shock was too profound. The operation in this case was done later and a large tumor was found. This tumor could be made out before operation, but with the hope that the woman would get in a better surgical condition we delayed several days before operating. This case terminated fatally, not from the loss of blood, but from absorption from the blood clots. She failed to rally. I believe then as I do now that if we had operated on this woman early she would have recovered.

I have operated on several of these cases before and since in profound shock, and all have recovered. I believe nearly all of them will recover if operated on early.

DR. LEWIS (closing): The two patients I operated on and lost were subjected to recurrent attacks of bleeding extending over a number of days, and both of them died within a comparatively short time, although the operation did not last over five minutes.

As to whether all cases should be operated on as soon as the diagnosis is made, that depends entirely upon surgical judgment. When some of these women go on and miss their periods their cases have been mistaken for appendicitis or some indefinite condition, and they have been allowed to go on until some practitioner is called in, recommends operation, and operation is performed, and they die not of the operation, but in spite of it. In operating on these cases one should be guided by the amount of shock and the length of time the process has been going on. If they are operated in profound shock the prospects for recovery are not so good. However, some of them recover when they are operated in profound shock.

ABSCESS OF THE LUNG WITH SPECIAL REFERENCE TO TREATMENT.*

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Mayo Clinic
Rochester, Minn.

Abscess of the lung, in the ordinarily accepted meaning of the term, has reference to the primary, localized pyogenic process. Secondarily infected tuberculous cavities, echinococcus cysts and localized lesions due to other specific infections such as streptothrix, fungae, amoebae, etc., are, therefore, by definition excluded. Clinical differentiation of these conditions may be difficult. Similarly, the borderline between abscess and localized bronchiectasis with cavitation is ill defined both clinically and anatomically. Gangrene of the lung is considered, by some writers, as a clinical entity. Typical cases do merit this distinction but all intermediate gradations between abscess and gangrene exist. Each may supervene the other. "Cases of pure pulmonary gangrene are hardly ever seen except on the dissecting table. When we diagnose pulmonary gangrene, and when we get it for treatment, it is almost always accompanied by suppuration; it is a case of abscess and gangrene."(4)

Etiology

Primary suppuration of the lung almost never occurs. Pulmonary abscess develops on a preceding inflammatory process or the infection is carried to the lung tissue through the bronchus, the blood stream or by direct extension. Of the inflammatory lesions, pneumonia appears to be the most common. It was traced in 14 of 50 cases of abscess and in 8 of 50 cases of gangrene found at necropsy at the Massachusetts General Hospital.(7) In Tuffier's series of 49 patients operated on for pulmonary abscess, lobar pneumonia was etiologic in 23. Bronchiectasis was noted by Lenhartz as etiologic in 15 per cent of 60 cases of gangrene.

Infection by way of the bronchus appears to be a more frequent cause of abscess than is generally recognized. Comparatively large foreign bodies may be aspirated into a bronchus unknown to the patients, particularly in cases of children. If the material happens to be organic—peanut kernels, grains of corn, etc. that do not cast shadows on the x-ray plate, the presence of the foreign body may be entirely unsuspected. Similarly particles of food, tobacco, mucus flakes, etc., may be inhaled in sudden inspiration as in laughing, hurried eating, deep sleep, stupor, etc. Inhalation of teeth during ether extraction is a not uncommon cause.

Abscess of the lung following tonsillectomy under general anesthesia appears to be of relatively frequent occurrence. The literature for the last few years contains numerous reported cases (Claytor, Bevan, Tewksbury, Manges, and others). Whether the infection is embolic or by inhalation is a disputed question. The fact that the complication usually follows operation under general anesthesia would seem to constitute evidence that the infection occurs by inhalation.

Extension, to a neighboring structure, of a suppurating process such as empyema, caries of vertebrae, suppurating bronchial glands, perforation of the esophagus in case of malignancy or stricture, perforation of the diaphragm following liver abscess or peptic ulcer, are less common forms. Embolic infection is occasionally observed in ulcerative endocarditis, puerperal sepsis, etc.

During the past year there have been 16 patients operated on at the Mayo Clinic for lung abscess. The apparent etiologic factors in these cases were as follows:

Pneumonia (post operative)	4
Teeth extraction	3
Tonsillectomy (operation elsewhere under general anesthesia)	2
Gastro-enterostomy for ulcer	1
Grippe	1
Trauma (followed by pneumonia)	1
Questionable	4

Symptoms and Signs

The characteristic symptoms of abscess of the lung are more or less those of a systemic infection, with cough and sputum. The signs are variable. The most suggestive single symptom is a productive cough. The sputum is usually purulent, foul, and profuse. It may, however, be muco-purulent or watery, and especially if the abscess is small and the communication with a bronchus is narrow or absent, the amount

*Read before the annual meeting of the Southern Minnesota Medical Association held at Mankato, Jan. 20 and 21, 1919.

Fig. 1. First stage operation showing suture of lung to intercostal bundles and parietal pleura.

of sputum may be very moderate. In 4 cases herein reported the sputum exceeded eight ounces in twenty-four hours. In two it was upward of twenty ounces. In most instances the amount was not in itself remarkable.

Sudden onset of a large amount of sputum was noted in one case in which the abscess followed teeth extraction under general anesthesia. The odor was offensive in 10 cases, exceedingly so in 2, and there was practically no odor in 4. Definite hemoptysis was present in 6. In no instance were tuberculosis bacilli found in the sputum. Elastic tissue fibers were demonstrated in one case.

Fever may be remittent, intermittent, or absent. It is usually present at the onset of abscess formation and incident to the retention of pus. It may be absent in the presence of profuse putrid sputum. Polynuclear leukocytosis is the rule, but it was absent in 4 of these cases. Weakness and marked loss of weight is usual. In 4 cases in the series there was a loss of more than 25 per cent of the body weight.

The physical signs of abscess are variable, owing to the presence of several inconstant factors. Among these are the size of the cavity, its distance from the periphery of the lung, the amount of surrounding pneumonitis, the varying amount of fluid content, the presence or absence of obstruction at the mouth of the bronchus draining it, the condition of the pleura, the presence or absence of plueral effusion, etc. The most characteristic sign in this series was localized dullness over the area involved.

The x-ray furnishes the most reliable evidence as to the location and extent of the lesion. Interpreted in the light of the history and other findings it is also probably the best means of diagnosis as to the character of the lesion.

The differential diagnosis rests, essentially, between abscess and localized bronchiectasis on the one hand, and tuberculosis, encapsulated empyema, and new growths on the other. The differential diagnosis of abscess and circumscribed bronchiectasis is often impossible. Chronic pulmonary abscess may lead to secondary bronchiectasis and abscess may arise in the parenchyma from the ulcerating through of a bronchiectatic abscess. The important consideration from the standpoint of treatment of bronchiectasis is the size and number of cavities. A large cavity, or even a number of small ones in a circumscribed area, may be drained with some benefit. Widespread foci, either unilateral or bilateral, will not be benefited by operation. The x-ray is indispensable in such cases. Cases in which the shadow is circumscribed in one lobe are the most difficult to differentiate but in these also, the patients are most likely to be benefited by operation.

Tuberculous cavitation is always to be differentiated from abscess. A family history of tuberculosis, an insidious onset and early hemoptysis, are suggestive of tuberculosis. Tuberculous infection is most frequent in the upper lobes, particularly the apices, but abscesses also

Fig. 2. Second stage operation showing burning of funnel shaped opening through the lung tissue down to the abscess.

occur there. Furthermore, typical pyogenic abscess may develop in the presence of a tuberculous lesion. Failure to find the bacilli in a characteristic purulent sputum, and the negative x-ray findings, are probably the surest means of excluding tuberculosis.

Six of the patients in this series had fever, hemoptysis, night sweats, and loss of weight. The x-ray showed a tubercular process in the presence of a typical abscess in two. One of the six was discharged from military service with a diagnosis of pulmonary tuberculosis. The patient died ten months later from an intractible gastro-enteritis, and necropsy showed an entire absence of evidence of tuberculosis.

An encapsulated or interlobar empyema is probably the most frequent type of a perforating abscess and is also the most difficult to differentiate. In some cases it is impossible to determine whether the process is primary in the pleural cavity or in the substance of the lung.

Malignant disease of the lung may simulate abscess by a chronic productive cough, fever, leukocytosis, physical signs, and the x-ray. In two such cases in our series operation was done. One case was not absolutely proved but the subsequent course of the disease gave every indication of malignancy; in the other a bronchiectatic condition was found at operation. Postmortem showed this to have been secondary to primary malignancy of the lung.

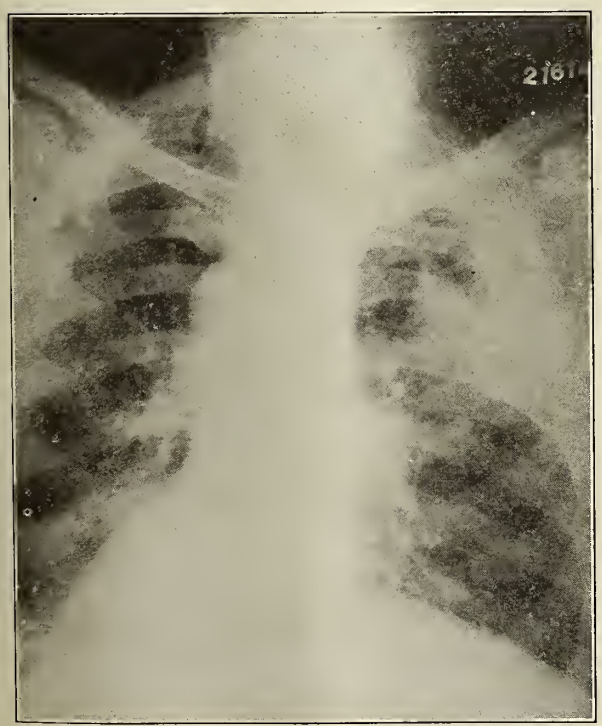

Fig. 3. (216141) 12-8-17. (Acute abscess) Plate taken ten days before operation.

Fig. 4. Same case as Fig. 3. 12-18-17. Plate taken ten days later before operation. Note marked increase in density of shadow.

The use of the aspirating needle in the diagnosis of abscess is decried by most surgeons of experience, if not by all. Even if adhesions prevent infection of the pleura, deep cellulitis of the chest wall may supervene.

Treatment

The treatment of lung abscess is drainage. The anatomic relations of lung parenchyma, bronchi, and trachea are such as to provide spontaneous drainage when the abscess has opened into the bronchus. The compression of the lungs by the chest wall and the diaphragm in coughing, further aids in expelling the pus. The patient often discovers that certain positions favor expectoration and so unconsciously makes use of gravity to help empty the cavity. That spontaneous cures result in this manner is to be expected. Probably a great many cases of small abscess with mild symptoms are never recognized. On the other hand a not inconsid-

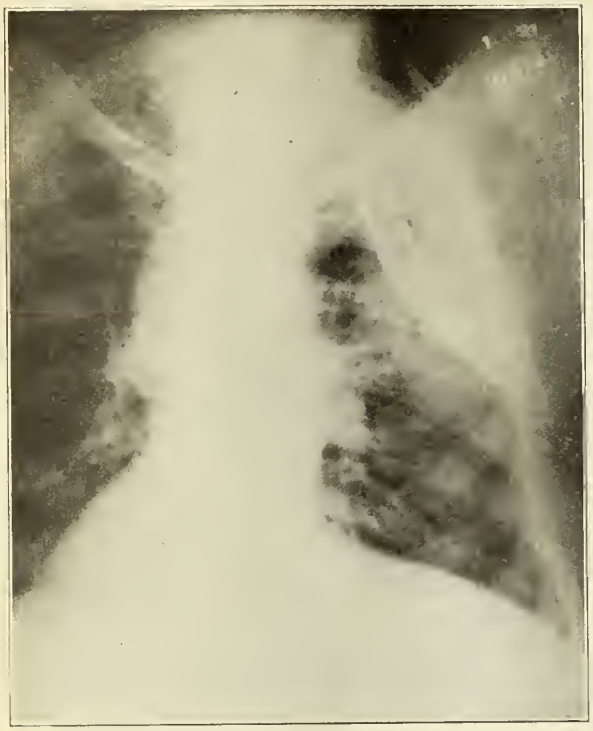

Fig. 5. (216141) 1-21-18 (Acute abscess) Plate taken three weeks after operation.

erable number of unquestioned cases with spontaneous cure are recorded.

Acute cases of the mild type, according to most writers of experience, may, therefore, be treated expectantly in the hope that drainage through the bronchus may effect a cure. These cases are such as most often follow pneumonia of a mild type, and even in these it should be understood that the presence of pus in the bronchial tree is a constant menace to other portions of the lung. In general the mortality in cases of abscess treated expectantly has been from 70 to 90 per cent.

Surgical treatment aims to facilitate drainage and to heal the abscess cavity either by carrying nature's method one step further—by collapsing the abscess walls, or by drainage from the outside, and, if necessary, mobilizing the chest wall to secure collapse of the cavity.

Collapse of the lung may be attained by rib resection or by artificial pneumothorax. Radical collapsing of the chest wall sufficient to obliterate the cavity was performed by Macewen in 1911. Tuffier has secured partial collapse of the cavity by separating the parietal pleura from the chest wall and inserting masses of fat. Forlanini in 1910 adapted his artificial pneumothorax therapy for tubercular cavities to those of pyogenic origin. Izar, Volhard, and notably Tewksbury in this country have reported cases cured by this method. The presence of pleural adhesions in a large proportion of the cases will probably always limit this method.

Thoracotomy with rib resection and pneumonotomy is the operation most extensively practiced and will probably remain, for most cases, the operation of choice. The technic I have used is as follows:

Operation

The incision is made over the affected area, as localized by the physical findings, and especially by the x-ray. If the focus is in the lower lobe a lateral or posterolateral approach probably is best; if it is in the upper lobe, the anterior incision gives the best exposure. The presence of the scapula, and thick back muscles limits the area that can be exposed high up posteriorly. In two recent cases in which the abscess lay posteriorly and high, good exposure

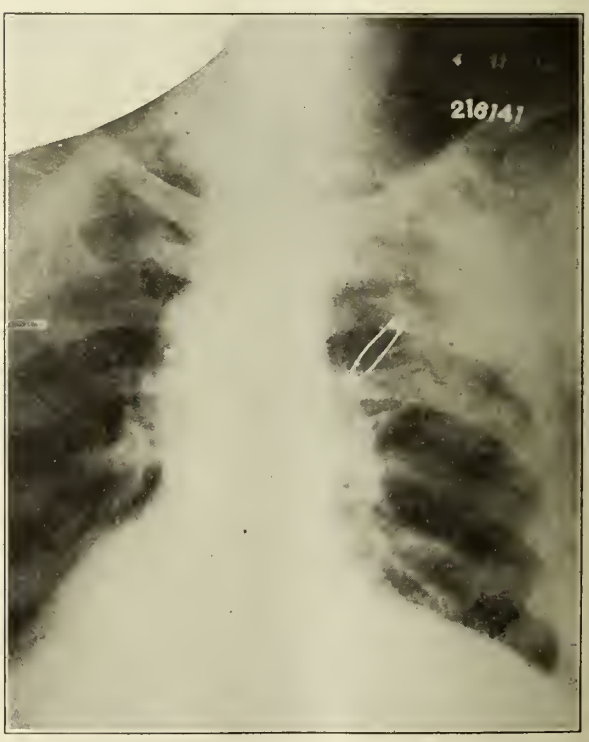

Fig. 6. Same case as Fig. 5. 4-11-18. Plate taken four and one-half months after operation. No symptoms, no sinus. Gained 50 pounds in weight.

was obtained by resecting the angle of the scapula. An ample incision larger than seems necessary should be made. One is continuously impressed by the rapid healing of wounds in the chest wall. If the incision is not ample the wound will close to a small sinus before the cavity in the lung has become obliterated.

Subperiosteal resection of about four inches of two or three ribs suffices for exploration. The further procedure depends on the presence or absence of adhesions of the lung to the parietal pleura. A thickened, greyish, opaque pleura indicates the presence of adhesions. In some cases the movement of the lung can be seen through the parietal pleura showing absence of adhesions. In other cases there may be adhesions in one part of the exposed area, but not in another; in still others a small incision is necessary in order to decide as to the presence of adhesions. A safe procedure, and one I have followed, is in case of doubt to act as though adhesions were absent. If adhesions are absent or only partial or doubtful, as in 9 of my cases, the lung is attached to the pleura and intercostal muscles by continuous catgut sutures. The lung may then be explored for the abscess, but there still remains the risk of leakage through the suture line. The empyema likely to result is a serious, often a fatal complication. Unless immediate drainage is urgent, it is therefore safer to wait a few days for adhesions to form, before attempting to drain. Other or supplementary methods of provoking adhesions are iodoform gauze packs, chemical irritants, cautery, etc. In my hands suture has sufficed.

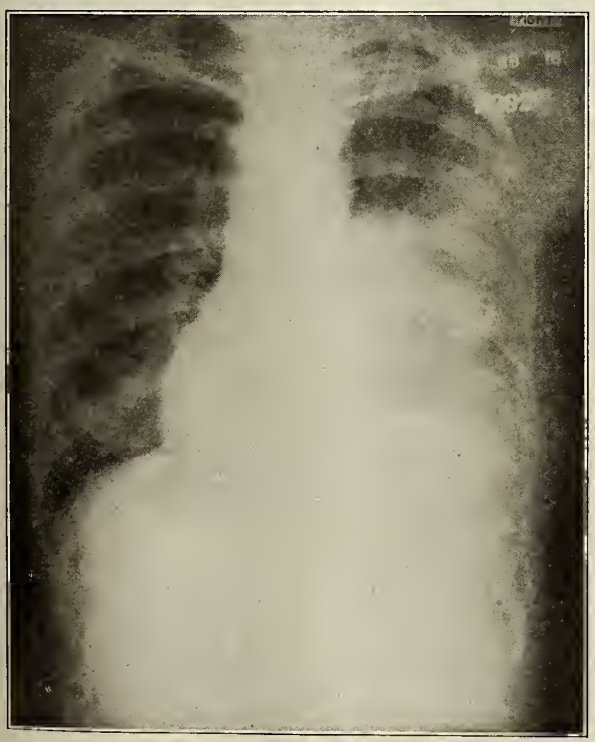

Fig. 7. (228271) 5-28-18. (Acute abscess) Plate taken just before operation.

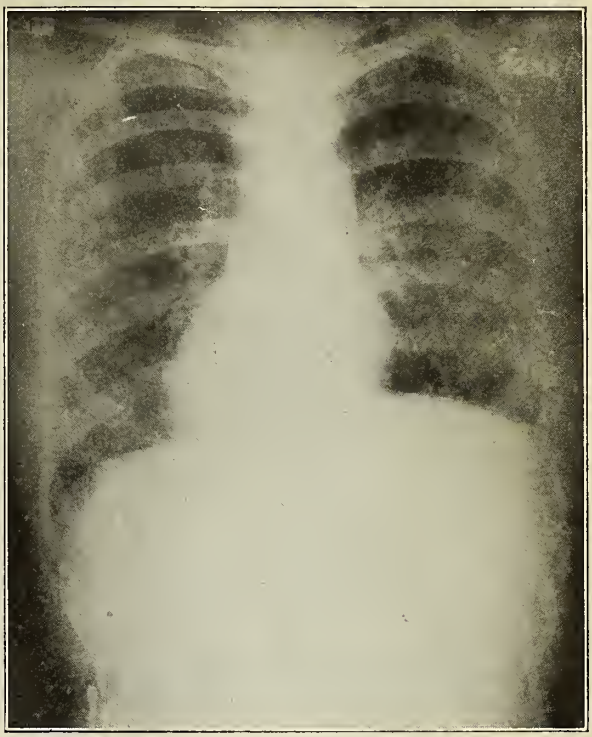

Fig. 8. Same case as Fig. 7. 9-6-18. Plate taken three and one-half months after operation. Slight residual cough. No sinus. Gain in weight about 50 pounds.

Exploratory puncture with an aspirating needle seems to me the most accurate method of localizing the abscess. It is important in this connection to remember that pus is most apt to lie near the periphery of the lung. The danger of piercing a large blood vessel by directing the needle deeply or by using a very large one must be recognized. In several cases hemoptysis occurred—in two with temporary but alarming dyspnea and cyanosis.

If pus is obtained, incision is made along the track of the needle by means of a cautery burning a funnel shaped path. Adequate exposure is thus furnished for drainage, and for the purpose of searching for secondary pockets. If the cauttery is kept at a dull red heat, good hemostasis is also secured. Occasionally no pus,

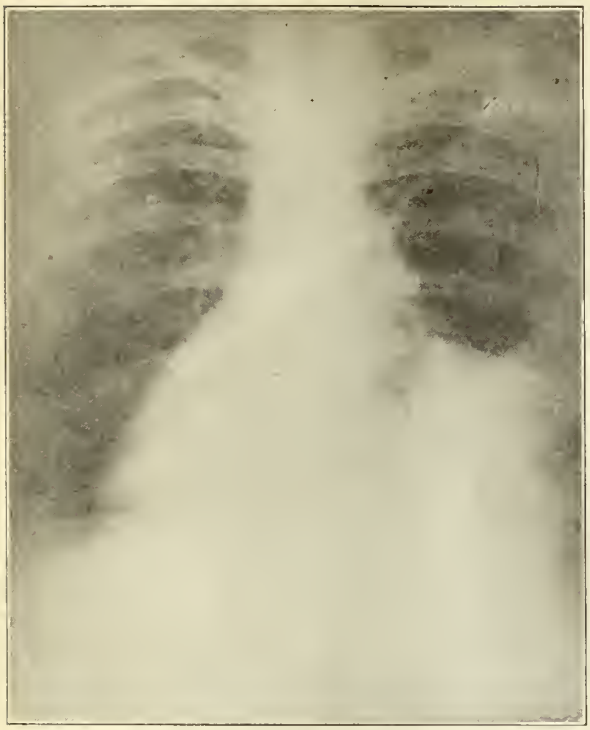

Fig. 9. (236782) 6-27-18. (Acute abscess) Plate taken just before operation.

but air only is aspirated at exploration. Willy Meyer considers this significant of entry into the abscess cavity, provided the aspirating system is air tight.

If no pus is aspirated, burrowing into the dense area with a blunt instrument or with the finger is recommended. In one such case, after repeated negative aspirations, I cauterized a tract into the dense area. Even though no pus was encountered the patient made a strikingly rapid and complete recovery. In another similar case no marked improvement followed two cauterizations fairly deep into the lung tissue. Three weeks later the patient died suddenly from accute profuse hemoptysis. Necropsy showed that an aneurysmal vessel had burst into the abscess cavity; the cautery had failed to reach the deep lying abscess by less than a half inch.

Gauze pack is the best safeguard against hemorrhage in the first days following operation. After it is removed I have used light gauze packs or soft rubber tubes cut in spiral fashion.

Complications

Secondary hemorrhage is a relatively frequent and often fatal complication. It is usually due to erosion of large blood vessels in the abscess wall or pressure-necrosis from stiff drainage tubes. Suturing, when practical, is the best method of control. Packing with gauze will usually control the hemorrhage for a time but relapses are common. Septic pneumonia and empyema are also to be feared. Empyema may be encapsulated and difficult to diagnose. Cerebral abscess is a relatively rare complication. A rare and interesting condition observed in one patient of the series was a total blindness lasting for twenty-four hours with complete recovery of vision.

Results

The 16 cases herein reported comprise all instances of lung abscess that were diagnosed at the Mayo Clinic during a little more than one year. All the patients were operated on regardless of the fact that several were desperately ill and, therefore, were very poor surgical risks. Operation offered them the only hope of recovery. Three patients died; a mortality of 18.7 per cent. All of the remaining 13 are improved. In three of these the operation is too recent to

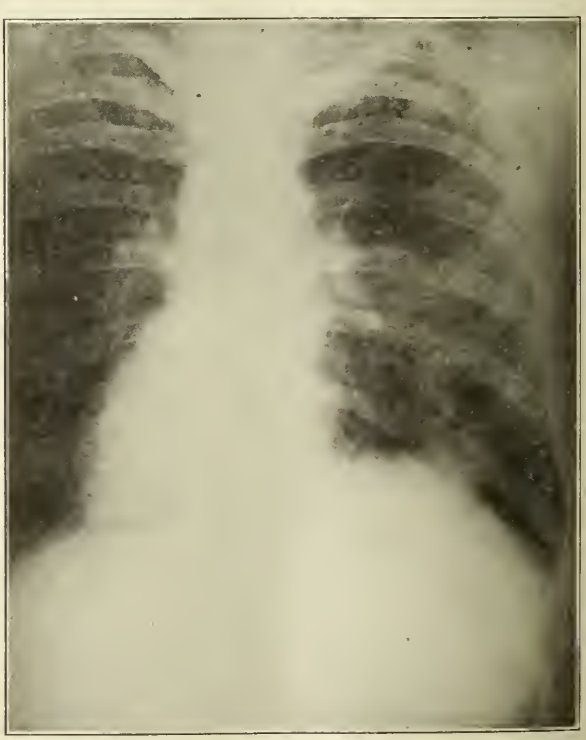

Fig. 10. Same case as Fig. 9. 12-30-18. Plate taken six months after operation Slight residual cough and sputum. Marked gain in weight.

classify as to the permanent result. Two have bronchial fistulas that will probably require plastic operation. Seven are cured in the sense that there is no sinus and they have no symptoms referable to the pulmonary lesion.

Conclusions

1. Abscess of the lung is a fairly common disease and is amenable to surgical treatment.
2. Pneumonia and inhalation of infected material are the most common causes.
3. A productive cough, dullness to percussion and a localized shadow on the x-ray plate are the most characteristic findings.
4. Abscess should always be considered in a differential diagnosis of pulmonary tuberculosis.
5. Late drainage doubles or trebles the operative mortality and morbidity.
6. A two-stage operation under local anesthesia is a relatively safe and satisfactory method.

REFERENCES

1. Bevan, A. D.: Abscess of the Lung. An important sequel to Tonsillectomy. Surg. Clinics of Chicago, 1918, ii, 921-931.
2. Claytor, T. A.: Lung Abscess Following Operations upon the Nose and Throat. Internat. Clinics, 1916, 26 s., ii, 73-79.

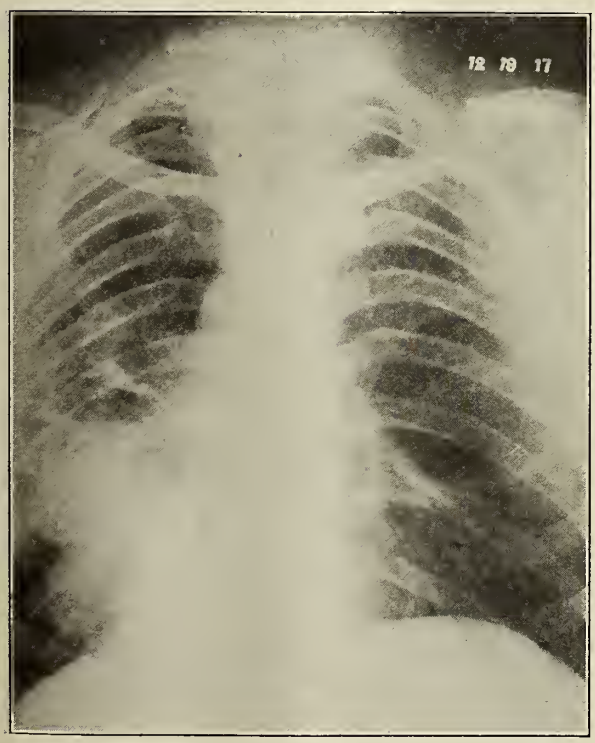

Fig. 11. (213924) 12-19-17. (Chronic abscess) Plate taken just before operation.

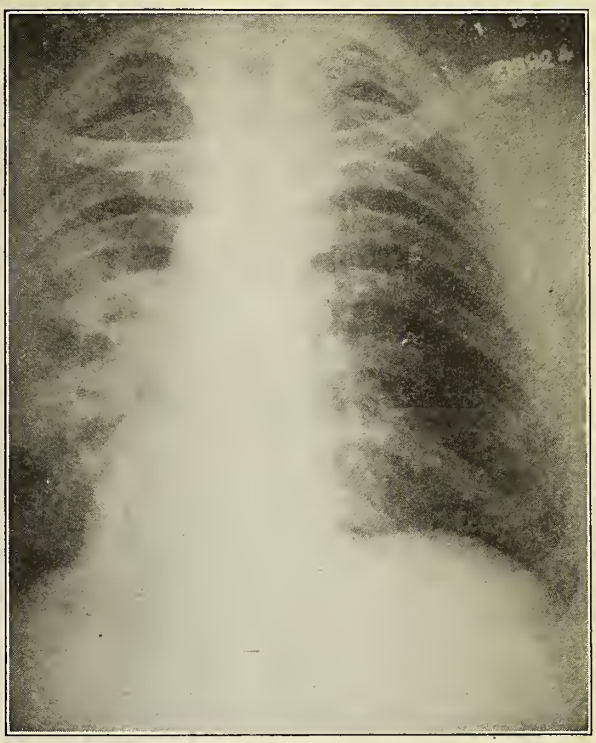

Fig. 12. Same case as Fig. 11. 1-18-19. Plate taken one month after operation. Report six months after operation much improved. Fistula.

3. Forlanini, C.: Ein Fall von seit sechs Jahren bestehendem durch kuenstlichen Pneumothorax behandeltem Lungenabszess. Muench. med. Wchnschr., 1910, i, 124-129.
4. Garre, C., and Quincke, H.: Surgery of the Lung. New York, Wood, 1913, p. 111.
5. Izar, G.: Un caso di ascesso polmonare venuto a guarigione mediante pneumotorace artificiale. Policlinico, sez med., 1913, xx, 449-454.
6. Lenhartz, H.: Quoted by Lord.
7. Lord, F. T.: Diseases of the Bronchi, Lungs and Pleura. Philadelphia, Febiger, 1915, p. 290.
8. Macewen: Quoted by Tuffier: Etat Actuel de la Chirurgie. Intrathoracique. Paris, Masson, 1914, p. 83.
9. Manges, M.: The Occurrence of Abscess of the Lung after Tonsillectomy; with a report of nine cases in adults. Am. Jour. Surg., 1916, xxx, 78-83.
10. Meyer, Willy: Pneumotomy for Bronchiectasis. Ann. Surg., 1917, lxvi, 603-604.
11. Tewksbury, W. D.: Treatment of Non-tuberculous Lung Abscess with Pneumothorax. Jour. Am. Med. Assn., 1918, lxx, 293-295.
12. Tuffier, Th.: Chirurgie du poumon, en particulier dans les cavernes tuberculeuses et la gangrene pulmonaire. Paris, Masson, 1897, 174 pp.

13. Tuffier, Th.: Etat actuel de la chirurgie. intrathoracique. Paris, Masson, 1914, p. 83.
14. Volhard, V. F.: Ueber den kunstlicken Pneumothorax bei Lungentuberkulose und Bronchiektasien. Munch. med. Wchnschr., 1912, lix, 1745-1750.

DISCUSSION

DR. S. C. SCHMITT, Minneapolis: I was in hopes that Dr. J. W. Little would be here to open the discussion on this paper, and that I could simply stand behind him and say, Amen.

We have been told by Dr. Wright that there are only twenty men in Minnesota who know the pathology of venereal diseases and are therefore competent to treat them. The number of men in Minnesota who are competent to discuss the subject that has been brought before us today by Dr. Hedblom is considerably less than twenty. I do not claim to be competent to discuss it, although I have been asked to do so. However, I want to bring out some points concerning a subject closely related to it, namely, empyema. We had in Base Hospital at Camp Grant about 80 cases, and every case was operated under local anesthesia. Dr. Hedblom mentioned something about these operations for lung abscess and empyema being done under local anesthesia, but that some surgeons are still doing them under general anesthesia. From our experience at the Base Hospital at Camp Grant we feel there is no excuse for doing these operations under general anesthesia. In fact, the chief surgeon of our service makes the statement that it is a criminal procedure to operate any of these patients under general anesthesia. The technic has been standardized for operating on these cases under local anesthesia, and every man in the surgical section or on the surgical staff, was able to do these empyema operations, including rib resection, in less than twelve minutes.

There are two methods of doing infiltration or of using a local anesthetic, one of which is described in the textbooks. We first locate the point of rib resection, usually the eighth rib, and locate it by getting the patient's arm above the head, and measuring three finger breadths below angle of scapula, gave us the eighth rib for resection, where the empyema was low. We do infiltration of the skin, using about 110 c.c. of a one-half percent solution; then wait ten minutes. We do not include that time in the time stated to be necessary for doing the operation. Then make an incision down to the rib, and infiltrate between the ribs with the local anesthetic. By this method we infiltrate the intercostal spaces and give sufficient time for conduction anesthesia to take place, while we tie the blood vessels to control hemorrhage. The conduction anesthesia is then perfect, and the patient experiences no pain. As the visceral pleura is insensitive to pain, you need no further anesthesia to cauterize a tract if there is a lung abscess to be drained.

THE THERAPEUTIC EFFECTS OF OVERFEEDING IN PERNICIOUS ANEMIA*

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The phenomena occuring as a part of the natural course of pernicious anemia make expecially hazardous any deductions drawn concerning the result of any particular mode of treatment applied. Concerning the efficacy of treatment there must be considered. A. The ultimate result. B. The effect upon the so-called crises. C. The symptomatic relief.

Bloomfield (Bulletin of John Hopkins Hospital, May 1913, page 101) writing from the case records of the Johns Hopkins Hospital makes very conservative statements in speaking of transfusion, focal infection, splenectomy and the usual routine. It seems that arsenic and arsenic preparations are given with a superstitious hope of the impossible. Splenectomy has come, and in some places at least, has gone. Transfusion is of value in selected cases, its greatest worth apparent in the immediate effects rather than in any real curative value. Focal infections have not been demonstrated as a cause of pernicious anemia and it has not been found that their removal has any direct effect upon the course of the disease. Barker and Sprunt (J. A. M. Dec. 8, 1917, page 1919) give a rather detailed account of their method of treatment, which consists largely of rest and the giving of 4000 to 5000 calories per day. In the discussion of this paper, Christian and Lindeman mention the increased appetite of patients following transfusion. Mosenthal (Bulletin Johns Hopkins Hospital, June 1918, page 129) reports three cases in which he quantitated the nitrogen intake and output. He found no difficulty in obtaining a positive balance and his patients gained in weight and the blood picture improved. The patients received from 50 to 60 calories per kilo per day and the average balances were from three to six grams per day. Metabolic studies (The Spleen and Anemia, Krumbhaar and Frazer, Lippincott 1918) on a case before and after splenectomy are recorded by Pearce. Before the operation the patient's nitrogen intake was 16 grams with a positive

*Read before the Minnesota State Medical Association, August 29-30, 1918, Duluth.

nitrogen balance of only .42 grams. Immediately following the operation on the same intake the balance was increased to 2.2 but at a later period had returned to practically the same level as before the operation. Minot (Bulletin Johns Hopkins Hospital, Nov. 1914, page 338) studied the nitrogen metabolism before and after splenectomy. The average balance for a five day period before the operation showed a loss of .78 grams. The patient lost three pounds in weight during the study. After splenectomy on a similar intake, about 25 calories per kilo, she gained in weight, although she only showed a very small positive balance, (.6). The chart shows considerable improvement in the blood picture. Von Nordin's (quoted by Minot) work showed no protein loss.

As a rule diet is included as a fundamental factor in treatment but specific recommendations are largely lacking.

The following cases were studied during the past year in the Minneapolis City Hospital. The patients were offered large trays and were given lunches between meals and during the night. They were encouraged to eat and all food was weighed. The food values were obtained from Atwater and Kent's tables and the nitrogen estimated by the Kjeldall's method.

Case I. W. G. Male. Age 48. Diagnosis: Pernicious Anemia. First observed June 30, 1917. Onset in Oct. 1916 with subjective numbness, incoordination, some soreness of the abdomen. He recently had an attack of obstructive jaundice. Physical examination: patient is a well nourished and not especially sallow or pale; there is no pigmentation; pupils are active; right is a trifle larger than the left; marked pyorrhea alveolaris present. Thorax is symmetrical; no dullness, no rales are heard over the lungs. The heart is not enlarged; it is regular; there are no murmurs heard. Abdomen is full; the liver comes two fingers breadth below costal margin; the spleen is not palpable. The knee jerks are active; sensation normal; vibration sense not found to be dimished. Cremasteric and abdominal reflexes are absent. Marked Rhomberg; no loss of muscular power; plantar reflex is normal. RBC 4,300,000; Hemoglobin 75%; WBC 5300; PMN neutrophiles 77%; lymphocytes 18%; transitional 2%; eosiniphils 2%; basophils 1%; no nucleated cells found; no myelocyts; a very slight anisocytosis; retuculated RBCs 6%. The resistance of the red blood cells to hypotonic salt solution is normal. The blood and spinal fluid Wassermann is negative. The urine shows only a very faint trace of albumin; specific gravity 1024; a few hyaline casts were seen in the sediment; urobilin and urobilinogen shows at times in the urine. This patient has constantly had an anacidity of the stomach; no occult blood in the stools. No lesion was demonstrated in the stomach at the Roentgen examination. The duodenal contents showed evidence of increased hemolysis. The value of the urobilin and urobilinogen estimated at 2400 and 1000 respectively. This patient was later observed and admitted to the Hospital in May 1918 when the erythrocyte

c.

Date	Pro.	Fat	CHO	Cal.	Cal. per Kilo	Urine	Feces	Total	Intake	Bal.	HGB	RBC	Wgt. Lbs.	Wgt. Kilos
July 21	61.1	127.8	143.9	1969	....	.....	.....	.....	9.7	.....	.....	.....	.....	.....
July 22	99.04	175.3	209.4	2847	....	.....	.....	.....	15.8	.....	.....	.....	.....	.....
July 23	92.3	169.	180.5	2576	....	.....	.....	.....	14.7	.....	55	2,200,000	.....	.....
July 24	104.1	163.	309.5	3011	....	.....	.....	.....	16.5	.....	35	1,900,000	.....	.....
July 25	152.1	156.4	213.8	2532	....	.....	.....	.....	24.3	.....	.....	.....	.....	.....
July 26	85.9	144.5	234.5	2475	....	.....	.....	.....	13.7	.....	62	1,900,000	.....	.....
July 27	113.4	187.7	284.8	3274	....	.....	.....	.....	18.1	.....	.....	.....	.....	.....
July 28	65.9	136.9	194.3	2219	....	.....	.....	.....	10.5	.....	.....	.....	.....	.....
July 29	88.4	158.06	248.2	2803	....	.....	.....	.....	14.1	.....	55	1,840,000	.....	.....
July 30	63.2	140.7	199.4	2537	57	.....	.....	.....	10.1	.....	55	1,840,000	96½	43.8
July 31	63.06	135.5	207.8	2332	53	6.38	1.	7.38	10.08	2.7	.....	.....	96½	43.8
Aug. 1	109.7	200.9	241.5	3162	72	2.252	0.159	2.411	17.5	15.089	.....	.....	96¾	43.9
Aug. 2	132.6	222.3	181.1	1904	42	4.706	.....	4.706	22.8	18.094	.....	.....	97½	44.3
Aug. 3	205.	153.5	194.8	2984	66	.....	.....	.....	32.8	.....	.....	.....	98½	44.7
Aug. 4	81.39	122.8	172.	2060	45	9.044	0.107	9.151	13.02	3.869	.....	.....	99½	45.2
Aug. 5	78.1	169.4	253.7	2608	58	.....	.....	.....	12.4	.....	.....	.....	98½	44.7
Aug. 6	17.2	32.08	42.42	533	11	6.740	0.590	7.330	2.7	4.63	60	2,172,000	98	44.5
Aug. 7	56.3	129.5	204.1	2084	47	6.222	1.118	7.340	9.008	1.668	.....	.....	96	43.6
Aug. 8	72.1	134.4	246.	2300	52	6.696	1.32	8.016	11.5	3.484	.....	.....	96	43.6
Aug. 9	96.3	235.07	252.04	2356	55	7.868	1.043	8.911	15.4	6.489	.....	.....	94¼	42.8

count was 1,000,000 and hemoglobin 40%. At the latter admission he was kept at rest in bed without medication and without improvement until June 7th, at which time he received a small transfusion of 300 cc. citrated blood. On July 12th he was put on forced feeding and studied for a period of one month.

Case II. Male. Age 34. Diagnosis: Pernicious Anemia. First observed May 4, 1918. Had had secondary anemia, so-called in 1913. Complains of chills and chilly sensations, some dizziness; has lost considerable weight; there is some enlargement of the cervical glands; has some cough recently and some soreness in the abdomen. Physical examination: Patient is a fairly well developed negro. There are a number of firm nodular masses varying in size from a few milimeters to 4.5 cm. They are discreet. There is some impaired resonance over the chest and a few moist rales are heard at the left base after coughing. The heart is regular; is not enlarged; there are no murmurs heard. There is some tenderness of the abdomen. The spleen is palpable. Roentgen examination shows no lesion of the stomach. Deep and superficial reflexes are normal; vibration sense is impaired over extremities. RBC 900,000; Hemoglobin 50%; there are a number of nucleated red cells, normal blasts and megloblasts. Reticulated red cells 6%; marked anisocytosis and poikilocytosis. The Wassermann reaction is negative. The blood serum shows a faint trace of bile pigments; bile salts negative. Urinalysis: Specific gravity 1024; reaction acid; very faint trace of albumin; few hyaline casts; no urobilin or urobilinogen in the urine; P.S.P. test 56%; no tubercle bacilli in the sputum. Von Pirquet test is positive; complement fixation test for tuberculosis is positive. The stereoscopic Roentgen plates of the chest show evidence of old tuberculosis. The duodenal contents examined for urobilin and urobilinogen gave values, for the former 3200, for the later 1200. This patient received no treatment other than forced feeding.

Case III. Patient female. Age 73. Entered Minneapolis City Hospital June 22, 1918. diagnosis: Pernicious Anemia. Complains of eructation of gas and morning vomiting; some diarrhea from time to time; extreme weakness; some swelling of the extremities. Examination shows a poorly nourished, elderly woman,

G.

Date	Pro.	Fat	CHO	Cal.	Cal. per Kilo	Urine	Feces	Total	Intake	Bal.	HGB	RBC	Wgt. Lbs.	Wgt. Kilos
June 14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	55	1,600,000	126	57.2
June 19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	65	2,800,000	130	59.09
June 24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	55	2,300,000	133	60.4
July 12	116.	169.5	311.8	2973	49	.....	.....	.....	18.5	.....	70	3,000,000	.....	.....
July 13	109.4	200.7	177.4	2916	48	.....	.....	.....	17.5	.....	75	3,000,000	.....	.....
July 14	109.3	228.8	304.1	3630	60	.....	.....	.....	17.4	.....	.....	.....	.....	.....
July 15	121.7	221.4	312.4	3731	62	.....	.....	.....	19.4	.....	.....	.....	.....	.....
July 16	131.2	194.4	341.7	3542	61	.....	.....	.....	21.	.....	70	3,100,000	127	57.7
July 17	123.3	175.1	317.9	3581	62	.....	.....	.....	19.7	.....	70	3,000,000	.....	.....
July 18	203.7	252.8	286.2	3311	58	.....	.....	.....	32.5	.....	70	3,500,000	.....	.....
July 19	150.6	184.9	353.	3580	62	.....	.....	.....	24.09	.....	70	3,000,000	.....	.....
July 20	207.3	314.	375.7	5187	89	.....	.....	.....	33.1	.....	70	3,100,000	127	57.7
July 21	195.9	303.2	441.4	5151	86	.....	.....	.....	31.3	.....	.....	.....	131½	59.7
July 22	176.3	265.6	378.7	4553	76	.....	.....	.....	28.2	.....	70	3,400,000	131½	59.7
July 23	149.4	258.2	329.4	4156	69	4.5	1.005	5.5	23.9	18.4	75	3,700,000	132	60.
July 24	166.6	283.9	380.8	4708	77	.....	.....	.....	26.6	.....	75	4,000,000	133	60.4
July 25	178.2	239.7	388.8	4443	73	.....	.....	.....	28.5	.....	75	3,850,000	132	60.
July 26	158.5	252.8	372.2	4194	69	.....	.....	.....	25.3	.....	75	3,800,000	133	60.4
July 27	116.2	228.1	376.5	3743	61	10.74	2.	12.74	18.5	5.76	75	3,600,000	133	60.4
July 28	148.4	215.1	313.9	3652	60	.....	.....	.....	23.7	.....	.....	.....	135	61.3
July 29	159.2	237.7	436.8	3949	62	.....	.....	.....	24.4	.....	75	3,800,000	138	62.7
July 30	167.3	227.8	378.1	4222	67	.....	.....	.....	26.7	.....	75	3,800,000	137¼	62.4
July 31	156.6	220.3	59.3	4140	66	.....	.....	.....	25.05	.....	75	3,900,000	136½	62.
Aug. 1	190.2	208.3	464.5	4443	71	8.835	2.768	11.603	30.4	18.797	80	4,000,000	137¼	62.4
Aug. 2	44.3	86.8	127.5	1404	22	4.665	.246	4.911	7.08	2.169	.....	.....	139¾	63.5
Aug. 3	284.6	174.6	364.4	3467	56	.....	.....	.....	45.5	.....	.....	.....	134¼	61.3
Aug. 4	52.08	50.77	56.34	814	....	15.361	1.307	16.668	8.33	8.338	80	4,000,000	.....	.....
Aug. 5	156.	223.4	432.2	4028	65	8.897	1.063	9.960	24.9	14.94	80	4,200,000	134½	61.1
Aug. 6	137.6	219.4	378.8	4036	65	6.936	1.132	8.068	22.01	13.942	80	4,100,000	135¼	61.4
Aug. 7	173.8	215.8	383.2	4068	66	14.273	0.324	14.599	27.6	13.001	80	4,000,000	134½	61.1
Aug. 8	133.	204.2	339.	3643	59	18.213	.....	18.213	21.2	2.987	80	4,100,000	135½	61.6
Aug. 9	168.9	270.2	370.9	4507	72	16.964	0.408	17.372	27.02	9.648	80	4,000,000	136½	62.

pale. Presents an interesting dark brown pigmentation over the hands, forearms and abdomen. Heart measures 3.5–9. Systolic bruit heard at the apex. Abdomen is lax; spleen is not palpable. By Roentgen examination of the stomach no lesion of the stomach was found. Deep and superficial reflexes are normal; vibration sense is impaired over the lower extremities. Blood examination RBC 1,900,000; Hemoglobin 55%; WBC 3,400; PMN neutrophiles 60%; lymphocytes 36%; transistional 4%. Urine: specific gravity 101; reaction acid; trace of albumin at times and on one occasion a few granular casts; polychromophilia; many nucleated erythrocytes noted; reticulated cells 8%; marked anisocytosis and poikilocytosis. P.S.P. test 50%. No urobilin or urobilinogen found in the urine. Stomach contents show an anacidity; no occult blood in stools. Duodenal contents: urobilin 1,200, urobilinogen 800. This patient received no treatment other than the forced feeding.

We experienced great difficulty in getting the patient in Case III to take the diet offered her, and while the summary shows a positive nitrogen balance, unrecorded emesis at times makes the figures unreliable. She is an asthenic individual with a dilated and ptosed stomach. It may be possible to show better results with her at another time when she is in a less refractory state.

Case I was able at nearly all times to take the diet offered him. During the month of forced feeding he gained in weight 4.2 kilos; 10% in hemoglobin and 1,800,000 RBC. The nitrogen output was quantitated for ten 24 hour periods and for nine of these days a positive balance was secured, the greatest retention being 18 grams. Just following this, the minimum positive balance is recorded for one day. The patient was unable to take his diet and a change to a negative balance with a loss of weight took place. It may be said that in spite of this man's anacidity, he did as well without as with the hydrochloric acid.

Case II shows a gain of 15% hemoglobin and 1,000,000 RBC, also his weight increased 4 kilos. This patient showed a variable though always positive balance, averaging 6.25 grams on the ten days in which the output was determined. The feeding in this way produced no appreciable change in the nitrogenous bodies of the blood in any of the pa-

M.

Date	Pro.	Fat	CHO	Cal.	Cal. per Kilo	Urine	Feces	Total	Intake	Bal.	HGB	RBC	Wgt. Lbs.	Wgt. Kilos
May 4													119½	54.3
June 5													121½	55.4
June 24													133	60.4
July 13	109.4	200.7	177.4	2944	48				17.5			2,400,000		
July 14	118.03	212.1	304.4	3575	59				18.8					
July 15	114.1	200.6	265.5	3341	55				18.2					
July 16	131.2	194.4	341.7	3542	58				20.9		70	3,100,000	131¼	59.6
July 17	130.2	183.5	328.2	3584	58				20.8					
July 18	203.6	248.1	286.2	4120	69				32.5					
July 19	150.6	184.9	353.	3580	58				24.09					
July 20	219.3	313.8	390.7	5156	84				35.08				135	61.3
July 21	182.1	286.4	422.5	4869	78				29.1				136	61.8
July 22	176.3	265.6	378.	4553	75				28.2				133	60.4
July 23	131.8	249.3	303.5	4000	66	14.9	1.48	16.38	21.1	4.72			133	60.4
July 24	100.5	177.3	333.1	2914	48				16.08		70	3,100,000	133¾	60.7
July 25	127.7	184.4	271.3	3274	54				20.4		70	3,200,000	132½	60.2
July 26	75.2	117.9	210.	2208	36								134¼	61.1
July 27													135	61.3
July 28	78.8	166.9	211.9	2581	42	9.76	2.00	11.76	12.6	0.84			134¼	60.5
July 29	95.8	163.9	243.7	2809	45								135¾	61.7
July 30	110.8	166.2	322.2	3188	52						70	3,000,000	135	61.3
July 31	132.1	199.8	325.9	3790	62								134½	61.1
Aug. 1	164.2	207.6	530.4	4173	69	11.543	1.394	12.937	26.2	13.263	70	3,100,000	136½	62.
Aug. 2	105.7	261.3	287.4	3162	50	10.936	1.204	12.140	16.9	4.76			139	63.1
Aug. 3	265.8	223.1	388.4	4103	66								136½	62
Aug. 4	183.9	284.9	277.8	3581	56	19.227	1.322	20.549	29.4	8.851			139¾	63.5
Aug. 5	156.	223.4	432.2	4028	63	12.943	0.682	13.625	24.9	11.275			138¾	63
Aug. 6	182.5	262.	424.8	4692	73	25.587	0.310	25.897	29.2	3.303	75	3,700,000	140	63.6
Aug. 7	174.6	237.6	399.4	4472	69	23.3	0.411	23.711	27.9	4.189			141	64
Aug. 8	152.4	239.1	350.9	3959	61	21.965	0.821	22.786	24.3	1.514	75	3,400,000	141	64
Aug. 9	169.03	269.9	375.5	4313	67	16.697	0.476	17.173	27.04	9.867				64

tients. There was observed no definite relation between the intake and output of fluid and the balances obtained. It is preferable to feed these patients a measured quantity daily, rather than to allow them to follow their inclinations, as feeding beyond tolerance in every case resulted in an inability to take even sufficient food for a day or two, during which time, of course, the balance was disturbed, usually more nitrogen was excreted than had been taken in.

In Case I the improvement seems to have been initiated by the small transfusion of blood. The nitrogen was not estimated at this time. It has, however, been shown that increased nitrogen loss is usual.

A diet allowing from 60 to 65 calories per kilo (approximately double the minimum requirement) can be recommended, this to be given in proportions of Protein 16%, Fat 42%, and Carbohydrates 42%.

Conclusions: Three cases of pernicious anemia have been studied with reference to the effect of forced feeding. In two cases, possibly in all of them, a positive nitrogen balance was secured without difficulty. During the gain. in weight symptomatic improvement took place and there was a distinct betterment in the blood picture.

DISCUSSION

DR. W. A. JONES, Minneapolis. (Discussing the papers of Drs. Woltmann and Peppard):

Mr. Chairman and Gentlemen: One of the greatest difficulties medical men, and particularly neurologists, encounter, is the early diagnosis of pernicious anemia; and yet, in spite of the absence of blood findings, there is something about these people that suggests the beginning of an attack of pernicious anemia. I gather from both papers that no one knows very definitely to what the attack is due, except there must be an accumulation of toxins of some sort, of unknown or unreliable type, at least.

In most of these people one may find, as pointed out by Dr. Woltmann, the common sensory disorders, and particularly that of joint-sensation. These sensations are sometimes extremely variable, and that alone is often sufficient to make one suspect a beginning of pernicious anemia.

The disorders of the mouth, I think, are suggestive. People who complain of disordered taste, and who have sweet and sour and sand-like sensations, and almost every conceivable disorder of taste, are, usually, affected with pernicious anemia.

My experience has been largely with the psychoses, and it has seemed to me that an unusual number of people who become mentally disordered are the early subjects of pernicious anemia. They begin, first as I have found, with the various sensory disorders, mild, but variable in degree. They usually show the typical cord-gait, of whatever type, whether posterior, lateral, or combined. This is soon followed by a mild confusion, which increases very perceptibly from week to week, until they finally become extremely violent, horribly noisy, and wholly disoriented. I have felt sometimes as if the mental side of the pernicious type was rather typical, that these patients had a special set of symptoms which differed from other psychoses. The treatment of them is very interesting, but not very satisfactory. All of these mental disorders rise and fall, but eventually decline, and the majority of them, I think, of both the cord and brain type, result in death.

I had a case some years ago of a woman who was very large in frame and was very fat, who had not menstruated for three years. She was then thirty-three years of age; and I gave her daily doses of iron and arsenic hypodermatically, so that in five weeks she came around normally, and menstruated with regularity for eight or nine years. This year, she had another attack, and she has gone now for more than six months. Her blood-findings are not very satisfactory except that they show a decided diminution in reds without much other change.

In one case the hypodermic was repeated four times in twenty-four hours, an enormous amount of iron being thrown into the blood-stream, and, I think, with very decided benefit,—that is, the results were highly satisfactory for the time being. It is astonishing how much iron a patient will absorb, and to what degree it brings back the normal mental condition and relieves the confusion and the disorientation.

The forced feeding with large quantities of food is a very important factor, but it has its difficulties, and sometimes it is almost impossible to carry it out.

Some of these people get better for a time, and then show a recurrence of all the typical signs. Most of them, as I have said before, go down. Very few of them make any permanent gain unless it be for a few months or perhaps for a few years.

DR. JOHN P. SCHNEIDER, Minneapolis, (Discussing the papers of Drs. Woltmann and Peppard):

Mr. Chairman and Gentlemen: Pernicious anemia has been a subject of study with us at the University, and thanks to the interest of the men in the State, we have had the opportunity of studying within the last four years 150 cases of pernicious anemia. And when I look back and see that in the seven years prior to that I saw one case that I recognized, I feel that we have seen some of the varieties. That is the difficulty with pernicious anemia. When you know one case, you don't know it, and the more you see the less you know.

The question of feeding in pernicious anemia is fundamental. It was so fundamental that it induced me to go to the great research laboratory at the University of California last month, because of some work that they were doing on dogs. These men had upset some of our speculations, and I thought it was a good idea to find out what they are doing now. They would

induce an anemia by hemorrhage in dogs, and then kennel them separately and try various feeding experiments.

The striking thing that was evolved by this work was that the dogs with a count of one million could be made to regenerate the other four million in three weeks by feeding meat. That same dog, with one million, would not regenerate his other four million in three months on carbohydrates.

Various protein principles, gelatin and other things, were tried, and the pyrol ring alone was tried, but none gave results. That brings us back to the man who gave raw beefsteak for pernicious anemia; and he was not so far off when it comes to the dietetic treatment.

We must realize the principles which enter into the regeneration of blood. Too much emphasis must not be placed on haemoglobin; that is less affected in pernicious anemia. Cholesterin is much more vitally affected. Cholesterin is derived from milk and eggs particularly, and cheese. Particularly, milk is the product from which cholesterin is derived. But both pyrol-ring rich foods and cholesterin-holding foods only indirectly enter into the making of blood. For it was shown in the California experiments that if the dogs were allowed to starve after being made anemic, that they would, in spite of starvation for three weeks, regenerate blood. The immediate progenitors of blood are katabolic products which are used in metabolism for the regeneration of blood. An extensive intake does not facilitate of itself the regeneration of blood. We must simply, as has been shown, endeavor to maintain a protein balance, so that the patient may in his metabolism, regenerate his blood through the tissue metabolism, because that is how he regenerates it.

In the practical handling of patients, my experience reminds me of a story of a chap whose wife had a carcinoma of the stomach, and I condoled with him after the wife had passed away; and he said, "Well, I told her that she would die. I said, you are too stubborn to eat, and if you don't eat you will die." That has been my problem with the pernicious anemia cases. When the patient goes into a remission he will eat wonderfully. I have one patient who has now been under observation for three years. This patient has on three separate occasions been in and near coma. He has had 48 transfusions in three years. He has had as many as 9 in one month. He has now gone into a remission, after having had 27 transfusions in three months, and now for three months he has not had any. He could not be induced to eat anything. Now he eats properly; he takes 4,000 calories a day spontaneously, and is attending to his business. again, after having been bedridden for the major portion of a year.

These bizarre things we know little about. And transfusion does this: if the patient is rapidly going down; if he is rapidly approaching dissolution, we can supply him artificially with blood with which to maintain life, but we do not produce a genuine remission, I am afraid. If we quantitatively figure up the amount of blood that the patient will receive, we can easily see how that can be accomplished, but so far as introducing a remission, I do not think that we can do it. It is usually longer than three months, which is about the maximum effect that we get with multiple transfusions. It has been even shown that these remission periods have nothing to do with our treatment apparently. It is so bizarre, it cannot be figured out.

On the other hand, the feeding problem is one entirely of the stage of the patient. I believe that rest with feeding is a valuable collary; but if Dr. Peppard will kindly carry through this treatment of these three patients under control untli the next annual meeting, and then present to us his data we will get something valuable, because of the fact that pernicious anemia is a disease of three or four or five years, in many cases; and an observation over a short period is of no value, because of these erratic changes that occur without our definite knowledge of how they are or are not influenced.

Dietetic treatment was in vogue in 1902. Hunter advocated it, and Graves, and later Kaufman, and it was shown that much can be accomplished.

Dr. Woltmann is to be congratulated on the fact that he has such valuable and diverse material, and because of that fact as Dr. Jones has pointed out, his findings are often bizarre and changeable, and different in every case. As a matter of fact, I presume the neurologist will see many cases of pernicious anemia that the internist will never see, because those with prominent neurological symptoms will go to the neurologist, and those who have lower organic symptoms will go to the internist.

I presume we are safe in saying that the origin of pernicious anemia is an infectious one, that it is not single, that there are various organisms which can produce the disease complex. We know that we have already taken away the group in which the treponema is the causative agent. I know one case which was splenectomized two years ago, a girl of 18 years of age; that was rather early, who had a tuberculous spleen. She is perfectly well now. She had a perfect pernicious anemia and there the tubercle bacillus was the etiological agent; and in removing the spleen we removed the only active source of her disease.

DR. E. C. ROSENOW: I would like to ask whether there has been any improvement in the focal infection coincident with the improvement in the patient?

DR. J. M. LAJOIE, Minneapolis. (Discussing the papers of Drs. Woltmann and Peppard):

Mr. Chairman and Gentlemen: I am sure we have all enjoyed the very interesting papers presented by Dr. Woltmann and Dr. Peppard. I was very much interested in Dr. Peppard's paper regarding forced feeding in the treatment of pernicious anemia. I have been urging my patients to eat as much as they can of foods of high caloric value, and the results have been very gratifying. Along with this, I have used transfusions of citrated blood by the non-surgical method. I feel that forced feedings and blood transfusions should be combined in our efforts to improve the patient's condition. In forced feeding it is diffi-

cult at times to get the patients to eat. They frequently complain of anorexia, gastric disturbances, nausea and vomiting. I generally insist that they eat whether they enjoy their food or not, and the feedings are usually six in the day, three full meals with plenty of foods that are rich in protein, and usually followed in two hours by milk or an egg-nog.

I find it also helpful with these patients to get them out of doors as much as possible. The open air stimulates their appetite. The appetite is also stimulated after a blood transfusion. The effects of transfusion upon the individual are never serious and are invariably beneficial. There are at times some slight reactions, but they are easily controlled by external heat and hot drinks.

With regard to medication, I have been in the habit of using arsenic in some preparation. I doubt whether it does very much good or not. The kind I usually use is sodium cacaodylate, or a iron-arsenic solution of Italian preparation.

There is one thing that is very important. It is an earlier diagnosis of pernicious anemia. Frequently we see patients who have a red blood count as low as one million, accompanied by the other usual changes, who are acutely ill, and a correct diagnosis has not been made.

It would be very interesting to have a paper on the same subject from Dr. Peppard at our next state meeting, so that we might hear the accumulated results of his work for the coming year.

DR. H. W. WOLTMANN, Rochester, Minnesota, (Closing the Discussion): In going over the charts of these patients of pernicious anemia, I was struck at the very frequent onset of the disease following immediately in the wake of some illness of infectious origin. In a great many of these cases also, pyorrhea and infected tonsils were very marked, however, I do not know whether this is more striking in these patients than one observes in individuals suffering from other illnesses. Many cases remain ,however, in which one can find no source which may serve as the focus of infection. Probably none of these patients get entirely well, even after the removal of every possible focus; to what extent they may improve, I cannot say. Possibly Doctor Peppard can tell us more about this.

DR. T. A. PEPPARD, Minneapolis. (Closing the discussion): Conservatism is certainly enforced upon all of us in discussing this condition. We can observe what happens in these cases after certain things have been done. Whether we can reason from that that these things happen because of the particular method or thing applied, probably cannot be said at this time.

Mosenthal does not parallel the secondary anemia cases with his three cases of primary anemia which he reports, but has one case of secondary anemia which responded much quicker, and the response is greater than in the other cases.

The most recent thing which I have seen concerning focal infection is that in an article by Bloomfield in the Johns Hopkins Medical Bulletin of May or June of this year, in which they made a particular study in an endeavor to get a clean bill of health for their patients from the specialists in various lines, but they could see no effect any different than in the patients who had not been so treated. However, he,—and I think that in general we agree with him,—advised the removal of the foci, but as to any evidence that it has any direct effect on the cure or course of the disease, I do not think that we have any.

FRACTURES OF THE HEAD OF THE RADIUS*

L. E. DAUGHERTY, M. D.,
St. Paul, Minn.

Fractures of the head of the radius occur frequently and we have found a constantly increasing number of clinical cases supported by skiagrams. Some of the reasons why this fracture is often not diagnosed is because there are as a rule no objective symptoms unless the injury is caused by direct violence. The bony landmarks of the elbow are not disturbed. Flexion and extension are not interfered with and little or no muscular spasm accompanies this motion. As a rule there is no swelling or hemorrhage into the joint. During the past year ten cases of this character have come to us for treatment and in reviewing x-ray pictures we have found many others which have been unrecognized. Thomas has had the same experience and collected 48 cases and found evidence of 55 others in skiagrams.

In taking X-rays of the elbow we are apt to depend on two views—one taken in an anterior posterior and the other in a lateral position. If the head of the radius is split, as it is apt to be, in a plane that will not show in either of these positions we are led to believe that no injury to the bone has occurred.

We can dismiss the difficulties of diagnosing those fractures which occur as the result of direct violence, for in those the deformity crepitus and muscular spasm particularly in supination with the arm flexed, are constant.

In dislocations of the elbow, a small portion of the cup-like depression of the head of the radius often is broken and this is that portion which is anterior and is fractured when the head is forced past the capitellum. It may and not infrequently does interfere with motion —either rotation or flexion. In one of our cases

*Read before the meeting of the State Medical Ass'n, held at Duluth, Aug. 1919.

occuring several years ago about one-third of the anterior lip was torn off at the time of a complete posterior dislocation of the elbow. It interfered with rotation and motion was seriously interrupted.

There are two fairly constant types of fractures of the radial head due to indirect violence and these are the two to which I wish to call your attention. In one there is a simple splitting of the head—the split extending down the shaft of the bone. This split may occur in any plane of the bone. There is usually little displacement and it is probable that the head of the bone is held in position by the annular ligament. In the other the anterior lip is crushed and has the appearance of a partial impaction of the head. In one of our cases of fracture of the capitellum in which it was necessary to remove this portion of the bone a split in the head of the radius was clearly demonstrated.

Of the two most common types of fracture referred to above probably the one seen most often is the splitting type. I have endeavored to produce this fracture in the cadaver but so far have failed. It is difficult to obtain an accurate description of the exact position of the arm at the time of injury but all of our cases resulted from a fall. The hand struck the ground while extended and the elbow was flexed. Simpson thinks that a violent abdution is the immediate cause, although a simpler explanation would probably be that the rounded capitellum is driven with such force into the cup-like articulation of the head of the radius that the head is split. I am at a loss to explain the cause of the other fractures unless it is that there is an attempt at a posterior dislocation of the elbow and the anterior lip of the cup like depression of the head of the radius is impacted against the capitellum with the arm in a flexed position. In all of our cases there was a distinct history of the arm being caught under the body.

One might suppose that if a Colles fracture was produced by an impaction of the lower end of the radius as a result of direct violence on the lower end of the bone—the force would be transmitted upward and that a fracture of the upper end of the radius would result instead of the lower. We would then look for fractures of the upper end of the radius to accompany a Colles. As a matter of fact these fractures do not often occur at the same time and the explanation is that Colles fracture is not due to direct violence on the lower end of the radius, but is due primarily to hyperextension of the hand and the tearing off of the lower fragment by the anterior radio carpal ligaments. The author has had the opportunity several times of producing typical Colles fractures in the cadaver by simply over-extending the hand.

The diagnosis is not easy but there are certain symptoms which are constant. As a rule there is no crepitus although in some of our cases a slight click has been perceptible. Flexion and extension though sometimes slightly painful are not interfered with. The motion of pronation and supination is definitely interfered with. This is particularly true if the elbow is flexed at a right angle and pressure is made on the thenar eminence towards the elbow. A muscular spasm is constant during this manipulation and is we believe a characteristic feature of this injury. Cotton calls attention to this diagnostic point and says that spasm on rotation is characteristic of all fractures of the radial head. Where the head is split far enough to cause a widening of the bone, motion of the joint may be mechanically interfered with and this is also true where a piece of the head is broken off and acts as a foreign body. Rotation is the motion most likely to be interrupted although flexion and extension may be limited depending, of course, upon the location of the loose piece of bone in the joint. We have never seen a separation of the upper radial epiphysis in a child.

The treatment of the two most common types of fracture, i. e. the splitting of the bone and the impaction of the anterior lip is simple. The elbow is put at rest in a right angle splint and this is done more to prevent rotation than flexion. The splint should remain in place at least three weeks.

In our cases recovery with complete function has been good. In one case, which came to us some weeks after the fracture, rotation is quite painful although the X-ray failed to show any displacement of the fragments. In case portions of the head are broken off and

act as foreign bodies, they will sooner or later have to be removed. It is fortunate that in old neglected fractures of this character in which there is a distinct limitation of motion we need not be afraid to resect the radial head for it can be done with no loss of function and no deformity.

In Conclusion

1. Fractures of the head of the radius are frequent and are often unrecognized.
2. The two most common types are a split extending downward into the neck and shaft of the bone and a crushing of the anterior lip.
3. The cause is not definitely determined.
4. The diagnosis can usually be made by the muscular spasm which accompanies rotation and this is present in all cases.

ILLEO-CAECAL CATHETER DRAINAGE OF THE INTESTINE IN DIFFUSE SEPTIC PERITONITIS*

H. C. Cooney, M. D. F. A. C. S.
Princeton, Minn.

It has now been demonstrated that death from peritonitis is not wholly due to peritoneal inflammation and absorption of septic material by the great sac, but, also, is in a large measure due to the retention and absorption of the poisonous contents of the paralytic intestinal coils. A closed or paralyzed segment of gut soon develops virulent bacterial toxins, and, unless drainage of the bowel in some manner is established, death results.

Draper has demonstrated that death always occurs in dogs upon whom a gastro-enterostomy had been made, and then a segment of the duodenum closed in two places, proximal to the gastro-enterostomy stoma. Such deaths are directly due to retention and absorption of toxins in the isolated loop. In my own work upon dogs treated in this manner, I found that life was prolonged twenty-four or forty-eight hours, if the dog was given water freely, over the time the control dog lived who was given no water.

It is a clinical fact that post-operative peritonitis patients ,whose bowels act upon the second or third day, usually recover. In the fatal cases the bowels cannot be opened. The patient looks, and is, poisoned, and dies from a type of auto-intoxication, as was pointed out by Lawson Tait many years ago.

McKenna of Chicago has practiced with success jejunal enterostomy upon a considerable number of patients with peritonitis, doing badly on the second or third day post-operative.

The operation is made under local anesthesia, a loop of jejunum is sewed securely to the parietal peritoneum, the gut is opened at once and soft catheters iserted into the proximal and distal loops which are thoroughly and frequently irrigated with saline solution or tepid water, and the bowel contents drained off. Recovery was the rule in these patients, who later underwent a resection for the closure of the fistula.

There are two objections to this method of procedure, although great credit is due McKenna for pointing out the great value of intestinal drainage in severe peritonitis cases. At operation we are often unable to determine how extensive the peritoneal inflamation is. Two or three days later, if the patient has done badly, and is nearly moribund, enterostomy will not save life, and its performance requires considerable courage on the part of the surgeon and patient, as well, when confronting the grave conditions present. Resection of the bowel after recovery of the patient is in itself a dangerous though necessary operative procedure in jejumal enterostomy.

Impressed, however by the results obtained in this type of cases by the trail blazing work of McKenna, I have now, for over two years, in all severe cases of septic peritonitis, from whatever cause originating, as a routine prophylactic measure, passed a soft No. 9 rubber catheter either through the stump of the appendix or, if this for any reason is not practicable, through a small stab wound in the caecum invaginating the aperture by a cat-gut circular suture, and tacking the caecum to the parietal peritoneum by one cat-gut suture, attaching the end of the omentum around the catheter to the caecal wall, draining the abdomen and putting the patient in the high Fowler's position. Through the catheter one-half pint of saline solution or tepid water is put into the intestine, the catheter clamped for two and a half hours and then allowed to drain into a bottle for half an hour. This treatment is strictly kept up for four or five days. Should

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there be much abdominal distention, after twenty four hours I inject four to six ounces of Pluto water through the catheter and repeat if necessary every twelve hours until the bowels act.

The bowels usually move spontaneously, or, if not, an enema in twenty-four or forty-eight hours after operation is given, no valuable time is lost, the catheter begins to drain gas and often fecal material while the patient is still on the operating table. The patients, now 22 in number, and all in critical condition with diffuse septic peritonitis, upon whom I have carried out this procedure, for early intestinal drainage and the instillation of large quantities of water, have so far all recovered, excepting two, who died a few hours after operation.

In my experience this type of cases preiously, with great regularity died. This is my excuse for emphasizing at this time an old simple surgical procedure which requires but a few minutes to perform, that can do the patient no harm, but a superlative amount of good.

The fistula, if indeed any such remains after the removal of the catheter closes in a few days; a catheter draining through the appentic stump into the colon at operation insures against loss of valuable time, secures drainage of the small bowel and colon and provides a certain method of enteroclysis which must be absorbed and not rejected as is often the case with proctoclysis. Saline cathartics, in my judgment, should be used through the catheter to stimulate peristalsis (high surgical authority to the contrary notwithstanding), if the bowels do not act in forty-eight hours. A double drainage tube is placed in the cul de sac of Douglass through a suprapubic tab and all intestinal adhesions are freeds quickly, so that the pus and septic fluid in the abdomen will fall into the pelvis in one pool. The patient is kept in exaggerated Fowler position for three or four days, some times longer, during which time only water and tea are given by mouth. If vomiting occurs the stomach is washed out.

As soon as these patients are safe, they develope hunger and I wait for that. Children who bear starvation poorly and who develope surgical acidosis easily, should have a 5% solution of glucose, or milk sugar in sufficient quantities injected into the bowel through the catheter from the beginning of its use. The catheter is usually removed on the sixth or seventh day.

DISCUSSION

DR. A. F. SCHMITT, Mankato: The essayist has opened a question of great importance, and one to which we have not given the requisite attention which the gravity of the subject demands.

The Fowler position has been mentioned and has been lauded. The true Fowler position means the elevation of the head of the bed and is of advantage when properly applied. I fail to see any logical reason why any patient with a diffuse septic peritonitis should be placed in the false Fowler position as it is generally used, or what you can hope to gain by placing the patient in a semi-sitting position. The intestinal coils gravitate down into the pelvic basin and obstruct and block up septic material which cannot get out, no matter how many drainage tubes you use, and also tends to obstruction. At this stage of inflammation you have no material which will drain—you have a plastic condition. You have the formation of fibrin and a gummy mass, and the very thing which you wish to overcome, by the semi-sitting position you prevent. I think the false Fowler position is wrong anatomically and surgically. I can see advantages in placing a catheter through the stump of the appendix for the purpose of irrigation, but the question arises how far these irrigations get up into the bowel. If you are dealing with a partial paralysis of the intestinal tract, what good can it do? I have had excellent results in these cases and have got along with drainage in the cul-de-sac as the doctor has suggested, making several openings and putting in free drainage to relieve intraabdominal pressure. But to put the patient in the false Fowler position is wrong. I have tried it out and have given it up. August Bier, who used the false Fowler position very extensively, now very emphatically condemns it. And if you are familiar with his writings and have followed his results you will find they have been better in the treatment of diffuse septic peritonitis by doing away with the "false" Fowler position and thus prevent the septic material getting down into the pelvis and mechanically preventing free drainage. The true Fowler position —raising the head of the bed and maintaining the body in a uniform incline and not kinking the trunk on the pelvis is rational and good surgery when supplanted with ample and properly placed drainage tubes. Then in addition the patient should be turned from side to side, turned frequently in a prone as well as in a supine position.

DR. J. A. THABES, Brainerd: I was very much interested in the doctor's paper, and also very much interested in what Dr Schmitt had to say about the Fowler position. His experience has been similar to my own. I tried the Fowler position for a great many years, but in the last few years I have practically given it up I find drainage is better and more efficient by placing the patients on the side where drainage naturally flows, and I have found this overcomes the tendency to the collection of pus within the pelvis. I have always drained by putting a drain in the cul-de-sac and also one in the flank, but I do not put these patients in the Fowler position any more.

I was much interested in that part of the doctor's paper relative to opening the bowel. I have recently, within two weeks, had two cases where it was necessary to do this. In one case it was due to a rupture of the small intestine in which the contents of the small intestine were poured out

into the abdominal cavity. The case was brought to me about thirty hours afterwards. This patient would have died if drainage had been established in that manner.

In another case of bad appendix the same procedure was followed. I am satisfied this patient would have died also had not drainage been established. Both were in a desperate condition. It is a matter of judgment when to do this, or whether we should do it at all. Certainly, it looks like a bad surgical procedure afterwards, but when a patient is in an extreme condition it is better to have a live patient with a fecal fistula than to have a dead one without it.

DR. A. N. COLLINS, Duluth: The essayist has stated some facts which are self-evident—facts in the past which gave rise to the origin of the Mixter tube, for sometime past a classical method of draining the intestine.

All the essayist says concerning the draining of the intestine in severe cases of diffuse septic peritonitis I agree with.

As to the Fowler position, I have always used it because as one of the participants in this discussion mentioned, it has become more or less the custom. I have not attempted to leave patients in the recumbent position, but I have always felt that if there was considerable fluid in the abdominal cavity, this fluid in the first two hours or less after the operation would gravitate to the lowest portion of the cavity. Intraabdominal pressure tends to squeeze that fluid out through the drainage wound. Very soon adhesions will form anyhow no matter what the position of the drainage. The intraabdominal pressure is the same whether the patient is in the Fowler position or recumbent position. I feel a little safer in using the Fowler position especially when the patient first comes from the operating table.

With reference to the matter of using cathartics, Pluto water and what not, to stimulate peristalsis, I have been very loth to order them. The principle of limiting the peritoneal septic process assumes the idea that we limit peristalsis. I have been loath many times to use pituitrin, although I have felt it was a valuable drug. It works admirably in some cases; it works usually in the first ten to thirty minutes, and larger doses may be used, say 1 c. c. or larger.

I had a very interesting experience some two years ago. I wrote on the order book to give 0.5 c. c. of pituitrin to a patient. The nurse read the order and gave five c. c. of pituitrin. The patient immediately began to pass flatus and eventually recovered. The nurse told me about a year afterward of the error in dosage.

Dr. Cooney (closing): I am considerably interested in the method of treatment I have today advocated, and I am sure you will appreciate its great value in all doubtful cases of diffuse peritonitis, if you try it out.

The late Dr. J. B. Murphy, of Chicago, one of the greatest teachers of surgery, treated this type of patient by a rapid laparotomy, removal of the necrotic appendix, pelvic drainage, Fowler's position and abundant proctolysis. I do not know that this method has been improved upon, nor am I aware that any one valid surgical objection against the high Fowler's position has been found. Personally I consider it of great value, under the plan of treatment as promulgated by Dr. Murphy; an average of seventy-five per cent of these patients recover.

With the method I have under discussion it is possible to save a much larger percentage of cases, just how many will recover I do not know, but my experience, in the past 24 months, with 22 cases of the worst type of diffuse peritonitis, has been, by using this method of treatment, recovery.

Regardless of academic theories, or objections, when dealing with this condition of things, I do what I think will be best for the patient who comes to me, with, at best, a small margin of safety, and considering the success I have had so far with the method outlined I shall continue to use it until I find one that is better.

There has been, to my surprise, considerable objection and discussion relative to the use of Fowler's position; every tyro in surgery understands that this position is not necessary for all laparotomized patients, and this paper deals exclusively with the surgical management of the worst type of septic peritonetal abdomen, from whatever cause it may arise and in such cases it is a very valuable aid to needed drainage. The patient is kept sitting straight up in bed.

Just how much ileum is going to be drained by a catheter drain, I do not know, but as long as these patients recover by its use (as they do) I am not troubling myself with any "arm chair" surgical objection to this kind of a drain, or objections to the use of salines injected through the catheter into the intestine, to rid the gut of toxins, from which the patients succumb, unless the bowels move within thirty-six or forty-eight hours after operation.

All new things, in medicine and surgery, have been promptly met by the "conscientious objector," and I should feel some considerable chagrin if my paper brought out less discussion than it has.

Minnesota Medicine

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Vol. II September, 1919 No. 9

EDITORIAL

THE STATE MEDICAL MEETING

The annual meeting of our State Medical Association will be held Thursday and Friday October 2nd and 3rd, at Minneapolis. The function of medical meetings of this sort as a sifter of medical ideas and methods is too well established to need any defense. Such meetings tend to the elimination of poor methods and erroneous ideas and the substitution and standardization of the best methods. As a stimulation to better and more scientific work they are without a substitute.

Medicine of today is partly a science but in the main an art. In spite of its astounding advance during the last fifty years when we may say it has assumed some scientific attributes, medicine is in an early stage of its evolution. As proof of this let any physician simply consider the conditions in which he must conscientiously admit himself comparatively or entirely helpless.

During the war period medicine assumed a different phase and many new ideas have exerted their influence. More than the usual mutation has occured and from the standpoint of efficiency and service can any physician and particularly the man forced to keep abreast of the times in a wide field afford to absent himself from the coming meeting?

A preliminary program appears in this issue of Minnesota Medicine.

AN INSIDIOUS INFLUENCE

A knock at the door. A gentleman with a grip full of samples and literature is ushered in. After a pleasant chat in which you are "informed" about the action of the particular remedies in which he is interested he leaves you samples and departs. You turn to your New and Non-Official Remedies or the lists of recently accepted articles published in each issue of your state medical or national journal and find no mention of such a remedy. There is no sign of such an article in the advertising columns of either journal. Why? Because the Council of Pharmacy and Chemistry of our national organization has investigated the article and found sound reasons why it should not be used by the profession or else the manufacturer did not deem it advisable even to submit the article.

Read the personnel of the Council and its staff of clinical consultants and then the rules of the council given in the first few pages of the volume of N. N. R. We as physicians have established the Council to protect ourselves and the public against fraud and ignorance. How many of us carelessly or otherwise fail to take advantage of its assistance is evidenced by the activities thru the mail and agents in remedies not approved by the Council.

Are we as a profession going to have our medication outlined and dictated even to a minor degree by unknown and unreliable individuals interested only in a commercial way? Are we going to be oblivious to the information and self protection afforded by our Council of Pharmacy and Chemistry?

We welcome the representative of the reliable firm who is well posted about his wares and who handles remedies approved by the Council or combinations of such.

Medication should be pursued on a reasonable basis and drugs prescribed according to their known action and seldom in the mere hope of getting an effect and never simply for the sake of pre-

scribing something. As a rule the less medicine taken the better off the patient. And after all a physician today can do better with a small fraction of the available drugs and combinations.

Let us be above board in our medication and particularly with ourselves. There is no excuse for our prescribing medicine the action of which we do not know or the contents and reliability of which we are uninformed.

Another phase of the subject of medication is worse—far worse. That is the enormous business in remedies done by the drug stores directly to the laity. The main consideration is too often the amount of profit on a particular remedy and the public does not know how to protect itself. This is another activity which would naturally come under the control of a federal medical department—if one existed.

AN INFLUENZA APPROPRIATION

Reports indicate that the influenza epidemic has subsided for the time being at any rate. It would be a short sighted policy however for the profession and country in general to simply forget that the epidemic ever existed.

We are justified in concluding that the recent epidemic, however varied the bacteriological reports may have been, was a repetition of the same scourge that visited the country and the world over in the early nineties. At that time the epidemic existed in a more or less severe form for several years. It would not be at all unreasonable to look for a similar occurrence in connection with the present one.

Even if this looked for continuance or more properly speaking recrudescence of the disease should not occur, the world, judging from past experience is not thru with the disease known as influenza. The next generation can unfortunately look for a revisitation and infection of the non-immune.

Epidemics of this sort have played a part in the working out of the theory of the survival of the fittest—the fittest from the standpoint of immunity or ability to develop immunity rather than from the standpoint of physique, for this epidemic like so many others took its toll largely from the ranks of the healthy and vigorous youth of the world.

The prevention of a continuance and of a repetition of such an epidemic is of national concern and activities on the part of our national health department—as yet not a separate department but known as the Public Health Service—should be urged and supported financially.

While an appropriation of a million and a half appears large from the individual standpoint, the individual standpoint of some of us at any rate, it is proportionately much less than the proverbial ounce of prevention from the national standpoint. The actual loss incurred to the nation by the epidemic cannot be calculated in dollars and cents. But estimating a human life at five thousand dollars (and who would part with his for any less) the loss in deaths alone amounted in our country to two and a half billion dollars. Considering the minimum combined loss of wage and production at seven dollars a day (and who now-a-days would consider his services worth any less) for each of the ten million affected; and considering that each lost on an average fifteen days; another billion could be added to the total loss to the country; making a loss ranging between three and four billion.

The efficacy of such an appropriation has been questioned. Much would undoubtedly depend on how the fund were used. Nothing may result from such efforts and yet the possibilities are great.

When we consider what has been done in the control and stamping out of other epidemic diseases the same results in combating influenza are certainly within the bounds of possibility.

From these considerations the resolution adopted by the section on Industrial Medicine and Surgery of the American Medical Association should be heartily indorsed. It is as follows:

WHEREAS, the present influenza epidemic caused approximately 500,000 deaths in the United States, and

WHEREAS, a large proportion of these deaths were produced by pneumonia and other complications, and

WHEREAS, influenza, pneumonia, and allied diseases now cause approximately one-tenth of all the deaths in the United States, and

WHEREAS, medical science is not yet in possession of complete data as to the cause, modes of transmission, prevention, and cure of this disease and its complications, and

WHEREAS, the possession of this knowledge is of grave social and economic concern to the nation:

THEREFORE, BE IT RESOLVED, that it is the sense of the members of the section on Industrial Medicine and Surgery of the American Medi-

cal Association, here assembled to discuss influenza, that Congress should and is hereby urged to appropriate not less than $1,500,000 to be used under the direction of the U. S. Public Health Service for the investigation of the causes, modes of transmission, prevention and cure of influenza, pnuemonia, and allied diseases, this sum to be made available to July 1, 1922.

Transmitted by order of the session, held in Atlantic City, June 13, 1919.

DR. OTTO P. GEIER,
Secretary.

Cincinnati Milling Machine Co.,
Cincinnati, Ohio.

A BILL

The attention of the medical profession is called to the following Bill which will be considered in all probability early in September by the Committee on Post Offices and Post Roads of our National Congress.

It is to the interest of our citizens to have venereal conditions treated by those best fitted through training and experience to do so. Certainly treatment through the mails or by those who advertise through the mails is inexcusable. Treatment of this sort has been possible because of the secrecy naturally surrounding diseases of this character. As a result many shysters have coined money at the expense of the public.

The campaign undertaken by the various State Health Boards through their Divisions of Venereal Diseases has removed much of an undesirable secrecy on this subject. The opening of public venereal clinics in the larger centers of population affords the best possible treatment to those in need of it and unable to employ their own medical service. In every larger center there are a few specialists properly equipped to care for the rest.

Today there is no need for the advertising venereal specialist or long distance treatment. A bill of this sort would eliminate both. It appears that this draft of the bill would prohibit the advertisement of medicine for the treatment of venereal disease to the profession. If such permission would leave a loop hole to dishonesty the medical profession would not be greatly affected if the Bill were passed as it stands. Nevertheless such advertising to the profession has its place.

Minnesota's representative on the committee having this Bill under consideration is Representative Halvor Steenersen and he should be informed of the opinion of the medical profession regarding the advisability of such a bill.

To prevent transmission through the mails of advertisements relating to the treatment of venereal diseases and certain sexual disorders.

Introduced in the Senate by Senator Townsend of Michigan, May 29th, 1919 and S. 1139.

Introduced in the House by Representative Halvor Steenerson of Minnesota. June 6th, 1919, as H. R., 5123.

BE IT ENACTED BY THE SENATE AND HOUSE OF REPRESENTATIVES OF THE UNITED STATES OF AMERICA IN CONGRESS ASSEMBLED,

That every book, pamphlet, picture, paper, letter, writing, print, or other publication containing advertisements which directly or indirectly represent or infer or call attention to a treatment or cure of syphilis, chancroid, gonorrhea, lost manhood, lost vitality, chronic discharges, gleet, varicocele, self-abuse, private diseases, or men's diseases, or to a medicine, article or preparation that may be used in the treatment therefor, or to a person or persons from whom, or an office or place at which information, treatment, or advice relating to such diseases, infirmity, habit, or condition may be obtained, is hereby declared to be non-mailable matter and shall not be conveyed in the mails or delivered from any post office or by any letter carrier. Whoever shall knowingly deposit, or cause to be deposited for mailing or delivery, anything declared by this section to be nonmailable, or shall knowingly take, or cause the same to be taken, from the mails for the purpose of circulating or disposing thereof, or of aiding in the circulation or disposition thereof, shall be fined not more than $5,000, or imprisoned not more than five years, or both. Any person violating any provision of this section may be tried and punished either in the district in which the unlawful matter or publication was mailed, or to which it was carried by mail for delivery according to the direction thereon, or in which it was caused to be delivered by mail to the person to whom it was addressed:

PROVIDED; That this section shall not apply to didactic or scientific treatises which do not advertise or call attention to any person or persons from whom, or any office or place at which information, treatment, or advice may be obtained nor shall it apply to advertisements, notices, and publications issued by any departments of the United States Government or any department of a State or municipal government.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNESOTA STATE MEDICAL ASSOCIATION MEETING

October 2 and 3, 1919, at Minneapolis.

PROGRAM

Medical Section

"Protein Sensitization in Asthma."
A. H. Sanford, Rochester.

"Influenza, Clinical and Pathological Observations."
W. S. Lemon, Rochester.

"Auricular Fibrillation and Life Expectancy."
F. A. Willius, Rochester.

"Tuberculosis of the Thyroid."
W. A. Plummer, Rochester.

"Vertigo:, The Determination of its Cause."
J. A. Watson, Minneapolis.

"Observations on Angina Pectoris."
H. L. Staples, Minneapolis.

"Blood Transfusion, Indications and Methods with Special Reference to the Sustaining Value of Repeated Blood Transfusions in Pernicious Anemia."
F. H. K. Schaaf, Minneapolis.

"Cerebro-Spinal Fluid in Lues."
F. Nixon and M. Warwick, Minneapolis.

"Diabetes Insipidus."
L. G. Rowntree, Minneapolis.

"Methods of Handling Dermatological and Luetic Cases in the Dispensary."
J. Butler, H. Irvine and S. Sweitzer, Mpls.

"Hypertension."
F. J. Hirschboeck, Duluth.

"Traumatic Nerve Lesions."
C. R. Ball, St. Paul.

Surgical Section

"Surgery of Little's Disease."
A. C. Strachauer, Minneapolis.

"War Wounds of the Major Joints."
A. A. Law, Minneapolis.

"Treatment of Tuberculous Spine."
H. W. Meyerding, Rochester.

"The Correction of External Deformities of the Nose."
J. D. Lewis, Minneapolis.

"Surgical Treatment of Tri Facial Neuralgia."
A. W. Adson, Rochester.

Discussion by A. C. Strachauer and C. R. Ball.

"Results in Cholecystectomy."
W. A. Dennis, St. Paul.

"Prolapse of the Uterus."
W. A. Coventry, Duluth.

"Surgery of Peripheral Nerves."
Treatment: J. F. Corbett, Minneapolis;
Diagnosis: A. Hamilton, Minneapolis.

"Abducens Paralysis Complicating Mastoiditis."
Geo. Dittman, St. Paul.

"Tumors of Great Omentum."
A. McDonald, Duluth.

"Symptomatology of Struma Maligna."
H. A. H.Bowman, Minneapolis.

Discussion by Dr. G. Schwyzer, St. Paul.

"Subject to be announced."
Dr. G. Balfour, Rochester.

Hotel Accommodations

Physicians wishing hotel accommodations during the October meeting of the State Medical Association, are requested to communicate with Dr. Hugh J. Tunstead, 1126 Metropolitan Bank Building, Minneapolis; telephone Main 229, at the earliest possible moment, stating accommodations desired, and hotel preference, if any.

OBITUARY

DR. EDWIN S. MUIR

Dr. Edwin S. Muir of Winona died at his home on July 14th at the age of 48 years. Dr. Muir opened an office in Plainview in 1894 where he practiced for four years, going to Winona in 1898 and has continued his practice there since that time. Dr. Muir was mayor of Winona twice. His death was due to a nervous break-down.

DR. JOHN FRANCIS SKINNER

Dr. John Francis Skinner died on July 14th at his home in Terrace. The deceased was born June 4, 1854 at Waukon, Iowa. When eleven years of age he moved with his parents to Forest City, Ia., where he resided until after his graduation from the Bennett Medical College of Chicago. He was married in 1881 to Miss Hermina Dahlum of Lake Mills, Iowa. Soon after his marriage he moved to Terrace, Minn. Six children survive him.

OF GENERAL INTEREST

RETURNED MEDICAL OFFICERS BANQUETED BY THE RAMSEY COUNTY MEDICAL SOCIETY

The Ramsey County Medical Society honored its members, who had served in the World War, by giving them a banquet at the Minnesota Club.

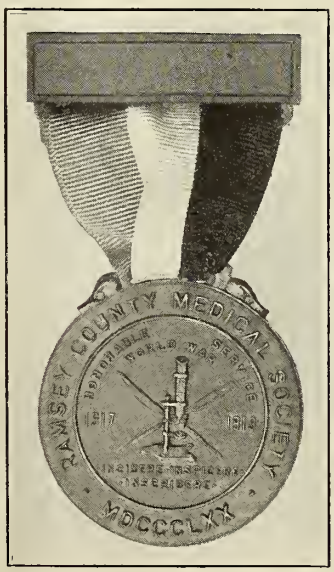
One hundred and fifty covers were laid upon beautifully decorated and furnished tables. The banquet room was trimmed with palms and flowers. An orchestra of eight pieces rendered a select programme during the evening.

The roll of honor of the ninety men who had enlisted was headed by the names of the two who had made the supreme sacrifice for their country, Lt. H. C. McIntosh, and Lt. Otto Winter.

The invited guests were the President of the Minnesota State Medical Association, Major George Douglas Head, still in uniform and the President of the Hennepin County Medical Society, Dr. J. C. Litzenberg, who was at Atlantic City and unable to be present.

After the tempting viands and wines were disposed of the toastmaster Dr. E. W. Buckley, President of the Society, took the meeting in hand and presiding with his usual rare tact disposed of the telegrams from many notables, the addresses and the vaudeville numbers.

Dr. Haldor Sneve made the address of welcome, Col. W. A. Dennis responded. Major Head spoke for the profession, which brought this very fitting testimonial to the patriotism and devotion to democratic ideals of the medical men of the Ramsey County Medical Society, typical of the whole country, to an end. The evening was a success throughout and was thoroughly enjoyed by every one.



Such a banquet under such auspices and surroundings will probably never be held in Minnesota again.

The Banquet Committee consisted of Drs. Buckley, Schuldt, R. Earl, Kannary, Plondke, and Brimhall.

The bronze medal given to each guest is shown in the cut.

Dr. J. W. Doyle of Minneapolis has located at Brewster.

Dr. W. J. Stock formerly of Waconia has located at Hastings.

Dr. D. W. Kohler, formerly of Albany, is now located at St. Joseph.

Dr. A. Cyr has been discharged and has returned to Barnesville.

Dr. P. C. Pilon has been discharged and will again locate at Paynesville.

Dr. A. D. Hard and family are motoring to Long Beach, California.

Dr. L. T. Davis, after two years service has again located at Wadena.

Dr. C. Swanson will leave St. Hilaire to take up hospital work in Minneapolis.

Dr. C. E. Goodman, Virginia, was married to Miss Esther Gomberg of Duluth.

Dr. H. J. Thornby has left Barnesville to take post graduate work in Chicago.

Dr. I. R. Maercklin has resumed his practice at Renville after serving in the army.

Dr. G. T. Nordin has returned to Minneapolis after having served overseas for a year.

Dr. L. M. Boyd has returned from service and has resumed his practice at Alexandria.

Dr. George E. Sutton has returned from service and has again located at Rochester.

Dr. E. H. Marcum has returned from France and has resumed his practice at Bemidji.

Dr. D. Edmund Smith of Minneapolis has returned from overseas Red Cross service.

Dr. John Abbott has returned to his pratice and opened offices at 939 Lowry Bldg., St. Paul.

Dr. F. E. Best has returned to Wells after having served for fifteen months in active service.

Dr. John Armstrong announces that he has moved his office from 1040 to 939 Lowry Bldg. St. Paul.

Dr. W. J. Dailey has been honorably discharged and has resumed his practice at Blooming Prairie.

Dr. George E. McGeary, Minneapolis, and Miss Myrl McKinnon were married on Wednesday, July 2nd.

Dr. J. M. Lajoie and family have returned to Minneapolis from a three months trip in Canada and the East.

Dr. Karl Dedolph has been discharged from the service and has opened his office at Selby and Snelling, St. Paul.

Dr. B. B. Luck has entered partnership with Dr. J. J. Geltz of New Richmond. Dr. Luck formerly practiced in the east.

Dr. A. M. Treat has gone to Sydney, Montana, where he intends to practice. He was formerly at Blooming Prairie.

Dr. Bronson Crothers will visit in St. Paul about the first of September and return to Boston to practice pediatrics.

Dr. John W. Lee has been discharged from the army and will resume his practice at 604 Pillsbury Bldg., Minneapolis.

Dr. E. J. Batchelder is associated with Dr. F. W. Schultz in the practice of pediatrics at 716 La Salle Bldg., Minneapolis.

Dr. Frederic W. Schlutz has received his discharge from the army and has moved his office to 716 La Salle Bldg., Minneapolis.

Dr. Walter D. Brodie has reopened his office at 94 W. Summit, St. Paul, having returned from a two years service in the army.

Dr. G. L. Baker will leave Ada to enter the Mayo Clinic at Rochester. Dr. Hanson of Park River, N. D., will locate at Ada.

Dr. C. H. Clark who has served for two years in the army will locate at Davenport, Iowa. Dr. Clark formerly practiced in Duluth.

Captain W. F. Maertz has been honorably discharged after serving eighteen months in the medical corps and has returned to New Prague.

Dr. B. F. Osburne of Duluth will leave soon for International Falls to take charge of the Northern Minnesota Hospital with Dr. Craig.

Dr. H. E. Robertson and Dr. R. E. Farr, Minneapolis, and their families will motor to Yellowstone Park during the month of August.

St. Hilaire, a town of 500, situated in Pennington County, is in need of and has a fine opening for a physician. Write O. Gunstad, St. Hilaire, Minn.

The members and their families of the Stearns-Benton County Medical Association held an outing-meeting on the north shore of Pelican Lake on July 17.

Dr. R. C. Radabaugh who was formerly located at Mazeppa has returned from service and will locate at Rochester where he will be associated with Dr. Granger.

Dr. W. G. Workman, Tracy, sailed on the Victoria arriving in America about the 16th of July. Dr. Workman has been in the service since April, 1917, and has resumed practice.

The town of Rushmore in Noble County is without a doctor. It is a small place of about 350 with a very good country about. If interested write Dr. F. M. Manson, Worthington, Minn.

Dr. Charles L. Greene, St. Paul, has returned from Seattle where he gave a series of lectures on the heart at the invitation of the University of Washington before some of the profession of the State.

Lt. L. R. Stowe, who has been acting as dental surgeon with the A. E. F. in France, will resume his practice on September 1st. He will once more be associated with Dr. R. E. Farr of Minneapolis.

Dr. C. E. Henry and Dr. C. C. Tyrell, Minneapolis have been promoted to the rank of Commanders. Dr. Henry and Dr. Tyrell have returned to civil life and are members of the naval reserve forces.

Capt. S. R. Maxeiner has been discharged from the service after two years with the British forces. He will continue as an associate of Dr. R. E. Farr of Minneapolis, with whom he has been since graduation.

Dr. W. H. Hengstler has been discharged from the service after two years in Europe and has associated with Drs. Riggs and Hammes, 1019 Lowry Bldg., St. Paul. Dr. Hengstler was formerly at Osakis, Minn.

Capt. Paul J. Preston is now out of service after nearly two years in Europe with the British forces. Dr. Preston has been cited for bravery and distinguished service, having been decorated by King George and General Pershing. He is once more associated with Dr. R. E. Farr of Minneapolis with whom he has been since graduation.

NEW AND NON-OFFICIAL REMEDIES

During July the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Non-Official Remedies:

Abbott Laboratories:
Barbital Sodium-Abbott.

Hollister-Wilson Laboratories:
Ovarian Substance-Hollister-Wilson.
Desiccated Corpus Luteum-Hollister-Wilson

Roessler and Hasslacher Chemical Co.:
Sodium Dioxide, Dental-R. and H.

NEW AND NON-OFFICIAL REMEDIES

Chlorcosane (McNeil).—A brand of chlorcosane containing from 35 to 40 per cent. of chlorine in stable (nonactive) combination. (For a discussion of the properties and uses of chlorocsane see New and Non-Official Remedies, 1919, p. 138.) Robert McNeil, Philadelphia, Pa.

Dichloramine-T (McNeil).—A brand of dichloramine-T complying with the N. N. R. standards. (For a discussion of the actions, uses and dosage of dichloramine-T, see New and Non-Official Remedies, 1919, p. 138.) Robert McNeil, Philadelphia, Pa.

Pituitary Solution-Abbott.—Liquor Hypophysis U. S. P. A sterilized solution of the water soluble extract of the posterior portion of the pituitary glands of cattle. It is standardized by the method of Roth. (For a discussion of the actions and uses of pituitary preparations, see New and Non-Official Remedies, 1919, p. 204.) The Abbott Laboratories, Chicago.

Ampules Pituitary Solution-Abbott, O. 5 Cc.—Each ampule contains 0.5 Cc. pituitary solution—Abbott. The Abbott Laboratories, Chicago.

Ampules Pituitary Solution-Abbott, 1 Cc.—Each ampule contains 1 Cc. pituitary solution—Abbott Laboratories, Chicago.

Pituitary Extract-Lederle.—A sterile solution containing the active principles of the posterior lobe of the pituitary body. It is standardized by the method of Roth and has the strength of Liquor Hypophysis, U. S. P. (For a discussion of the actions and uses of pituitary preparations, see New and Non-Official Remedies, 1919, p. 204.) Lederle Antitoxin Laboratories, New York.

Ampules Pituitary Extract-Lederle, O. 5 Cc.—Each ampule contains 0.5 Cc. pituitary extract-Lederle. Lederle Antitoxin Laboratories, New York.

Ampules Pituitary Extract-Lederle, 1 Cc.—Each ampule contains 1 Cc. pituitary extract-Lederle. Lederle Antitoxin Laboratories, New York.

Antidysenteric Serum (Polyvalent)-Lederle.—(For a description of Antidysenteric Serum, see New and Non-Official Remedies, 1919, p. 269, and for Antidysenteric Serum-Lederle, see The Journal A. M. A., April 14, 1919, p. 1136.) It is also marketed in syringes containing 50 Cc. each, with sterile needle. Lederle Antitoxin Laboratories, New York.

Streptococcus Vaccine (Polyvalent)-Lederle.—(For a description of Streptococcus Vaccine, see New and Non-Official Remedies, 1919, p. 291 and for other Lederle preparations see the Journal A. M. A., April 19, 1919, p. 1136.) It is also marketed in 10 Cc. and 20 Cc. vials; in packages of four 1-Cc. vials containing, respectively, 50, 100, 200 and 400 million killed streptococci; and in packages of four syringes containing, respectively, 50, 100, 200 and 400 million killed streptococci. Lederle Antitoxin Laboratories, New York. (Jour. A. M. A., July 5, 1919, p. 35.)

Tuberculin "O. T."-Lederle.—Old Tuberculin (see New and Non-Official Remedies, 1919, p. 277). Marketed in packages containing a stated amount of tuberculin and sufficient diluent to make 1 Cc. as follows: Dilution A containing 0.1 Cc., Dilution B containing 0.01 Cc., Dilution C containing 0.001 Cc., Dilution D containing 0.0001 Cc., Dilution E containing 0.00001 Cc., Dilution F containing 0.000001 Cc. Lederle Antitoxin Laboratories, New York.

Tuberculin "B. E."-(Lederle).—In addition to the forms previously described, New Tuberculin "B. E." (see New and Non-Official Remedies, 1919, p. 280 and N. N. R. supplement p. 10) is also marketed in packages containing a stated amount of tuberculin with sufficient diluent to make 1 Cc. as follows: Dilution A containing 0.1 Cc., Dilution B containing 0.01 Cc., Dilution C containing 0.001 Cc., Dilution D containing 0.0001 Cc., Dilution E containing 0.00001 Cc., Dilution F containing 0.000001 Cc. Lederle Antitoxin Laboratories, New York.

Tuberculin "B. F."-(Lederle).—In addition to the forms previously described, Tuberculin "B. F." (see New and Non-Official Remedies, 1919, p. 280 and N. N. R. supplement p. 10) is also marketed in packages containing a stated amount of tuberculin with sufficient diluent to make 1 Cc. as follows: Dilution A containing 0.1 Cc., Dilution b containing 0.01 Cc., Dilution C containing 0.001 Cc., Dilution D containing 0.0001 Cc., Dilution E containing 0.00001 Cc., Dilution F containing 0.000001 Cc. Lederle Antitoxin Laboratories, New York (Jour. A. M. A., July 12, 1919, p. 105).

PROPAGANDA FOR REFORM

Partola.—A physician reports that a patient taking Partola as a blood purifier is now in a rundown condition with discoloration of the skin and a craving for the drug and that another patient took three tablets before going to bed, developed cramps and aborted the next day in her third month of pregnancy. Analysis indicated Partola to be tablets containing 2.64 grains phenolphthalein per tablet, sugar, starch and oil of peppermint (Jour. A. M. A., July 5, 1919, p. 55).

Commercial Therapeutics.—The Merrell Proteogens present another attempt to foist on the medical profession a series of essentially secret preparations whose therapeutic value has not been scientifically demonstrated. It is the old story of exploiting physicians through commercial pseudoscience, of trading on the credulity of the profession to the detriment of the public. Sir William Osler says the remedy against the commercial domination of therapeutics is obvious: "Give our students a first hand acquaintance with disease, and give them a thorough practical knowledge of the great drugs, and we will send out independent, clear-headed, cautious practitioners who will do their own thinking and be no longer at the mercy of the meretricious literature, which has sapped out independence." Excellent! But must humanity wait a generation? Why not stop this evil at once? The American Medical Association has provided the means whereby this may be done, if physicians will only make use of it—The Council on Pharmacy and Chemistry (Jour. A. M. A., July 12, 1919, p. 109).

Tyree's Antiseptic Powder.—An advertisement appearing in the New York Medical Record contains a bacteriologic report on Tyree's Antiseptic Powder by W. M. Gray, M. D., Microscopist, Army Medical Museum, and Pathologist to Providence Hospital. Every person who sees this advertisement and is not familiar with the facts will naturally suppose that this report, written on the stationery of the Surgeon-General's Office, War Department, is a recent report. As a matter of fact, the report was issued January 3, 1890, nearly thirty years ago. Furthermore, the product that Dr. Gray examined was a different substance from the present Tyree's Antiseptic Powder. All these facts were brought out in the Journal A. M. A., May 17, 1919, yet the Medical Record persists in publishing this inherently dishonest advertisement without explanations or apology (Jour. A. M. A., July 12, 1919, p. 129.)

Protecting the Sick Soldiers.—The Council on Pharmacy and Chemistry, aided by the A. M. A. Chemical Laboratory, did a great work in investigating and passing on the many medicinal products offered to the Surgeon-General for the treatment of the sick soldiers in the hospitals and in the field. Fakes of every description were offered the government and it is a well known fact that no matter how fraudulent, how fakish, or how ridiculous the wares might be, their promoters were able to get political influence, even certain congressmen and senators being secured to help them. Automatically all medicinal preparations offered to the Surgeon-General were referred to the Council and thus many worthless preparations were barred from use by the government. It has been well said that our soldiers were better protected than our civilians; for while the government does not take any chances on the acceptance of useless if not worthless medicinal preparations, yet there are any number of doctors who fail to profit by the findings of the Council on Pharmacy and Chemistry (Jour. Ind. State Med. Assn., July 15, 1919, p. 196).

Proteogens of the Wm. S. Merrell Co.—The Council on Pharmacy and Chemistry report that Proteogen No. 1 (Plantex) for Cancer, Proteogen No. 2 for Rheumatism, Proteogen No. 3 for Tuberculosis, Proteogen No. 4 for Hay Fever, and Bronchial Asthma, Proteogen No. 5 for Dermatosis, Proteogen No. 6 for Chlorosis, Proteogen, No. 7 for Secondary Anemia, Proteogen No. 8 for Pernicious Anemia, Proteogen No. 9 for Goitre, Proteogen No. 10 for Syphilis, Proteogen No. 11 for Gonorrhea, and Proteogen No. 12 for Influenza and Pneumonia inadmissible to New and Non-Official Remedies because their composition is secret; because the therapeutic claims made for them are unwarranted; and because the secrecy and complexity of their composition makes the use of these preparations irrational. The Proteogens are said to be prepared "Under the personal supervision of the originator, Dr. A. S. Horowitz," who also originated Autolysin (an alleged cancer remedy, exploited some years ago). At one time the advertising for Proteogen No. 1 (Plantex) gave the impression that this was essentially the same as Autolysin. A study of the medical literature revealed no evidence establishing the value of the Proteogens; in fact, no evidence was found other than that appearing in the advertising matter of the manufacturer. The range of disease in which Proteogens are recommended is so wide as to make obvious the lack of scientific judgment which characterizes their exploitation. Considering the grave nature of the diseases for which Proteogens are recommended, the want of a rational basis for the method of treatment and the general tenor of the advertising, it appears safe to conclude that these agents do not represent any definite advance in therapeutics (Jour. A. M. A., July 12, 1919, p. 128.)

Dr. De Sanctis' Gout Pills.—The American agent for these pills is E. Fougera and Co., Inc. When examined in the A. M. A. Chemical Laboratory they were found to contain powdered colchicum seed, benzoic acid and milk sugar. There are also present fatty material which resembled the fat of colchicum seed, but might be in part added fatty acid. It was concluded that De Sanctis' pills are essentially five grain doses of colchicum seed. Here then we have sold for self medication, an extremely poisonous drug with no warning of the risk the public runs in using it (Jour. A. M. A., July 19, 1919, p. 213.)

Dr. Miles' Heart Treatment.—According to the Miles Medicine Company this is "a strengthening regulator and tonic for the weak heart." No information regarding the composition of Miles' Heart Treatment is vouchsafed by the manufacturer beyond the statement of the alcohol content (11 per cent.) as required by the law. However, quotations in the advertising suggests that the preparation contains digitalis and cactus. To determine the presence or absence of digitalis in Miles' Heart Treatment, physiologic tests were made. The question as to the presence of cactus was not considered of interest because cactus grandiflorus has been shown to have no physiologic action. The physiologic tests indicated that there were no digitalis bodies present in the preparation (in amounts that could have any therapeutic effects) in doses containing enough alcohol to induce narcosis. Examination in the A. M. A. Chemical Laboratory showed Miles' Heart Treatment to be a solution of a compound or compounds of iron representing about 0.12 gm. metallic iron in 100 c. c. A solution of iron glycerophosphate in 10 per cent. alcohol, with about 5 per cent. glycerin, and a little sugar or glucose had much the same chemical properties as Miles ' Heart Treatment (Jour. A. M. A., July 26, 1919, p. 287).

"Accepted by the Council on Pharmacy and Chemistry."—The Council on Pharmacy and Chemistry of the A. M. A. is the department of our national organization that has not received the plaudit and encomiums of a wildly joyous medical profession nor the grateful praises of the enthusiastic manufacturer of pharmaceutical articles. Perhaps the reason for this may be found in the character of its duties, for the Council must expose fraud, sometimes in high places, and protect the physician from being duped by avaricious persons and by persons who are themselves sometimes the victims of their own credulity. It thus happens that some proprietary article previously held in high esteem by the practitioner proves valueless, perhaps even fraudulent. The practitioner, however, may have credited much of his success in treating sick conditions to that preparation and the maker has had success in accumulating dollars from the sale, and both parties emit a loud and vicious roar against the Council because both lose money. Despite many obstacles the Council on Pharmacy and Chemistry has serenely pursued its allotted tasks and today stands as the only medium through which physicians may turn for information regarding proprietary articles. The words "accepted by the Council on Pharmacy and Chemistry of the American Medical Association" should be printed on the label and on all advertising circulars of proprietary articles that have been admitted to New and Non-Official Remedies. Then, when pamphlets and circulars are received by physicians, they will read the statements of manufacturers with sympathetic understanding and with full confidence of their verity of declarations (Jour. Mo. State Med. Assn., July 1919, p. 223).

PROGRESS IN MEDICINE AND SURGERY

OBSERVATIONS ON INTRATRACHEAL ANESTHESIA IN NEUROLOGIC SURGERY: A. W. Adson, M. D., Surgical Section on Neurology, Mayo Clinic, Rochester, Minnesota (Abstract of paper presented before the American Association of Anesthetists, Atlantic City, June, 1919.)

The author believes that intratracheal anesthesia has a definite though limited field of usefulness. While at one time intratracheal anesthesia was used extensively in operations on the oral cavity, tongue, larynx, chest and brain, it is now iudicated only occasionally in operations on the oral cavity and chest and in operations on the cerebellum, pons, and medulla.

When anesthesia is administered intratracheally, the tube should not be inserted until the patient has been anesthetized by the inhalation method. The anesthetic should be carried very lightly during the operative procedure on the cranium, as the concussion produced by cranial operation aids in making the anesthetic deeper than that nominally obtained with ether. The patient does better without morphin, as this tends to disguise the exact stage of anesthesia. Atropin should be administered before the anesthetic is started. It is important to place the head in a normal position during operations on the cerebellum and pons in order that suffocation or improper inhalation may be avoided. For this purpose a cerebellar head rest has been adopted, which can also be used in cervical laminectomies.

CLINICAL STUDY OF NERVE ANASTOMOSIS: A. W. Adson, M. D. Surgical Section on Neurology, Mayo Clinic, Rochester, Miunesota (Abstract of article to be published in Ann. Surg.)

A brief review of the history of nerve anastomosis, details of the etiology of the diseased condition requiring such treatment, the histology of nerve regeneration, the different operations and their results are given with the end results of 41 cases of nerve anastomosis having a postoperative record of sixteen months or more.

In discussing the operative procedures the author emphasizes three distinct conditions which may be found and their treatment:—(1) Neuromas on both ends of a severed nerve, the larger being on the proximal end, must be resected before anastomosis, (2) trauma to the nerve with the development of interstitial neuritis and pseudoneuromas suggests neurolysis if the function is fifty per cent or more, otherwise, resection and end to eud anastomosis is done, and (3) constriction of the nerve in scar tissue or callus is treated, with regard to resection, as are cases of trauma.

The operation of choice is the end-to-end anastomosis, without tension, made with fine sutures of silk. If the operator is compelled to leave a gap be-

tween the sutured ends, it should be less than three centimeters and may be bridged either with autogenous transplants of sensory fibers or by fascial tubulization. If the gap is more than five centimeters, tendon transplantation or arthrodesis is advised. It is further emphasized that regeneration occurs, quite successfully, during the first year, but that the amount of regeneration diminishes as time elapses between the date of the injury and that of the repair, the results being only fair after the second year and very rarely successful after the fifth.

The average amount of return of function in the forty-one cases reported is 62 per cent; 73 per cent of the patients operated on showed improvement, in 17 per cent the operation was a total failure, and in 10 per cent it gave indefinite results.

CUTTING THE SENSORY ROOT OF THE GASSERIAN GANGLION FOR THE RELIEF OF TRIFACIAL NEURALGIA: A. W. Adson, M. D. Surgical Section on Neurology, Mayo Clinic, Rochester, Minnesota. (Abstract of article to be published in Surg., Gynec. and Obst.)

The author believes that patients suffering with trifacial neuralgia have a very definite symptomatology and that the treatment should follow one of three courses:—(1) Alcohol injection into the peripheral branches—this is only indicated at the onset of the neuralgia in feeble patients who are poor operative risks, and in patients who are being prepared for the radical operation. While it is a palliative measure only, the average time of relief afforded is nine months. (2) Avulsion of the peripheral branches—this may be resorted to in some instances, but it, also, is a palliative procedure, the average time of relief afforded being eight months. It is more difficult to repeat than the alcohol injection. (3) The physiologic extirpation of the ganglion, or division of the posterior root. While avulsion of the posterior root relieves the patient permanently from pain, it is occasionally attended with two serious complications:—paralysis of the seventh cranial nerve due to trauma at the exit of the root from the pons, and, trophic interstitial keratitis due to injury of the inner portion of the gasserian ganglion supplying the ophthalmic branch.

The technic of the extirpation of the ganglion employed by the author differs from the usual technic in that the dura propria covering the ganglion is not divided except over the posterior root and that the ganglion is not exposed during the dissection except at the posterior margin; the posterior root is cut with a guillotine knife on the crest of the petrous bone and a small pledget of muscle is inserted into the dural foramen, pushing the proximal end of the posterior root back into the posterior fossa. This technic avoids injury to the pons and ganglion, particularly the portion supplying the ophthalmic branch, prevents paralysis of the seventh cranial nerve, and markedly diminishes the frequency of trophic interstitial keratitis.

THE RESULTS OF SPLENECTOMY IN THE ANEMIAS: William J. Mayo, M. D. (Paper presented before Am. Surg. Assn., June 1919.) declares that splenectomy as a curative agent has been given a fair trial in three types of the anemias; splenic anemia, pernicious anemia, and hemolytic icterus, and its successes and failures can be reasonably shown by the data at hand.

Splenic anemia.—While splenic anemia is a clinical entity, it cannot be said to have a definite pathologic existence. It may be defined as a fibrotic splenomegalia with a marked endophlebitis causing a secondary type of anemia which is progressive but not constant until later stages. A few clinicians regard all splenic anemias as syphilitic in origin but the writer's experience does not bear out this theory. A much better idea of splenic anemia would be obtained if the pathologic condition of the spleen and its effect on the blood were made the criteria and all cases of known causation as well as those unknown causation were classified as splenic anemia. Banti's disease is merely a late phase of some cases of splenic anemia. Of 61 patients with splenic anemia from whon the spleen was removed, 7 (11.7 per cent) died.

Pernicious Anemia.—The etiology of pernicious anemia is unknown, the early symptoms are indefinite, and by the time the diagnosis can be made the patient cannot be cured. The disease may be described as a progressive degeneration of the red blood in which there is a permanent loss of blast cells or mother cells of the erythrocytes. If it might be asserted that the spleen exhibits definite pathologic changes or that in cases of pernicious anemia in which the hemolysis is most marked patients have a greatly enlarged spleen, a direct connection between the spleen and the disease would be established. Unfortunately, experience does not support this hypothesis, and the size of the spleen does not seem to bear definite relationship to the severity of the disease. Splenectomy in pernicious anemia does not appear to be based on sound reasoning and there seems to be little foundation for the belief that the procedure will cure pernicious anemia, although splenectomy is a means of marked palliation. Fifty patients with pernicious anemia were splenectomized with three deaths (6 per cent).

Hemolytic Icterus.—Hemolytic icterus has not been classified with the anemias, but the peculiar splenic activity results in an anemia which is the cause of death. As in splenic and pernicious anemias, the etiology of hemolytic icterus is unknown. The well developed case of hemolytic icterus stands out with a vividness unequalled in splenic anemia and in pernicious anemia. The characteristic features are an enlarged spleen, chronic jaundice with exacerbations, normally bile colored feces, and absence of bile in the urine. The enormous destruction of red corpuscles in the spleen inundates the liver with blood pigments, and renders the bile thick. The viscid bile in hemolytic icterus tends to form gallstones. Sixty per cent of all the patients with hemolytic icterus operated on had

associated gallstones and all the possibilities of biliary duct infection. The triumph of splenectomy is the cure of hemolytic icterus. The only patient lost of the 27 splenectomized for hemolytic icterus was one operated on during an acute exacerbation.

SOME OBSERVATIONS ON THE CHEMICAL EXAMINATION OF THE BLOOD AND URINE IN NORMAL PREGNANCY AND IN TOXAEMIA OF PREGNANCY: J. R. Losee (N. Y. State Jour. of Med., Aug. 1918) compares the blood and urine findings in cases of toxaemia of pregnancy as shown in cases of pre-eclampsia, eclampsia and pernicious vomiting with what is found in cases of normal pregnancy and cases or normal non-pregnant adults.

He uses eight cases of normal pregnancy, four of pre-eclampsia with nine urinalyses, four of eclampsia with six urinalyses and four of pernicious vomiting with five urinalyses.

The method of collecting the specimens and the methods by which the various determinations are arrived at are described briefly but are exceedingly technical and quite beyond the understanding of all but highly experienced laboratory men.

Comparing the normal pregnant with the normal non-pregnant on a general diet, he finds that the total urinary nitrogen in the former is somewhat lower while the urea and ammonia per cent thereof are about normal and the total amount of urea for the 24 hours is normal. The urea nitrogen of the blood may be considered lower than in the normal non-pregnant although what the latter should be seems to vary widely with the different observers.

In the pre-eclamptic, while the urea per cent of the total urinary nitrogen had decreased from an average of 82 to 66 and while the urea nitrogen of the blood had increased from an average of 12 to 20, he does not regard the increase of the latter sufficient to account for the decrease in the former nor for the gravity of the symptoms.

The creatinin and sugar in the blood remained as in the normal as did also the CO_2 combining power of the plasma.

Passing to the eclamptic cases he found a still further decrease in the urea per cent of the total urinary nitrogen, from 82 to 53 but the urea nitrogen of the blood he found in a series of 13 cases to be from 10 to 26 mgs. per 100 CC of blood, which is practically normal.

This he interprets to mean that the convulsions of the eclamptic are not due to a saturation of the blood and tissues with retained urea but rather to a reduced urea formation in the liver due to its diesased condition.

It is a fact that in cases of eclampsia with three to four days of coma and suppression of urine that the urea nitrogen of the blood is not increased.

However, when it comes to a differential diagnosis between eclampsia and interstitial nephritis with uraemia, which diagnosis can often not be made until at autopsy, we find that while the urea nitrogen of the blood in the former is often normal or slightly increased, in the latter it is increased to as much as from 60 to 300 mgs. per 100 CC of blood.

The creatinin in the blood of the eclamptic is about normal while in uraemia it runs as high as 33 mgs. (over 20 times what it is in the normal pregnant).

According to many observers the urea nitrogen of the blood in acute and chronic parenchymatous nephritis is normal or slightly increased. This shows a remarkable similarity between kidney pathology and blood findings in cases of eclampsia and acute and chronic parenchymatous nephritis.

He cites a case of an eclamptic who had had convulsions and was in coma in whom the urine was collected 12 hours after the last convulsion and after she had had two grains of morphine. In spite of the huge dose of the narcotic she excreted a normal amount of urine in 72 minutes. (Might this normal excretion not explain the lack of morphinization in the Stroganoff treatment.

The CO_2 combining power remained normal and at no time suggested an acidosis.

The cases of pernicious vomitting, which is a severe form of toxaemia, the only determination which was sufficiently abnormal and constant to be of value was a high ammonia coefficient.

ALBERT G. SCHULZE, M. D.

FOURTEEN POINTS CONCERNING OPHTHALMIA NEONATORUM: Frank Allport, M.D. (New York Medical Journal, vol. cix, No. 9, March, 1919) as part of symposium upon the subject, epitomizes and formulates this scourge into fourteen definite considerations.

1st. Ophthalmia Neonatorum is responsible for about twenty per cent of the blind in the United States and for about twenty-five per cent of the inmates of blind asylums.

2nd. It costs about $30.00 a year to educate an ordinary child, and about $400.00 a year to educate and care for a blind child.

3rd. There are about fifty blind schools in the United States costing about two million dollars a year to maintain.

4th. Ophthalmia Neonatorum costs the United States about seven million dollars a year in actual money.

5th. Next to optic nerve atrophy ophthalmia neonatorum is the most prolific cause of blindness in the United States.

6th. The Crede treatment for all new born children would almost entirely eliminate ophthalmia neonatorum and its dreadful consequences from the world.

7th. The use of this evidently necessary treatment is by no means universal and its omission is not confined to midwives.

8th. Midwives are a financial and sociological necessity. Fully one-half the confinements are attended by midwives.

9th. Births should be compulsorily reported within a few hours. The ocular condition should be reported and the physician should state whether or not he has used the prophylactic treatment.

10th. Suitable laws should be passed in each state providing for the invariable use of Crede prophlaxis in all newly born children and proper penalties should be imposed for the non-observance of such instruction.

11th. While not prophesying as to what the future may produce in the way of prophylaxis it is reasonably certain that at present there is no remedy that can take the place of nitrate of silver.

12th. One almost insurmountable difficulty in the way of proper treatment of ophthalmia neonatorum is the paucity of resources in combating the disease. This disease apparently has no friends. Nobody wants it around.

13th. Health departments in larger cities should employ an experienced eye nurse to search out and follow up cases of ophthalmia neonatorum and to see that immediate action is taken when cases are found.

14th. I believe that great benefit can be accomplished by free and frequent distribution of brief and pointed pamphlets printed in several languages by some central organization such as a National Committee for the Prevention of Blindness.

George C. Dittman.

OBSERVATIONS ON THE BACTERIOLOGY OF INFLUENZA AND BRONCHOPNEUMONIA: Gladys H. Dick and Eleanor Murray (Jour. Inf. Dis., vol 25, No. 1) describe the method used by them at St. Luke's hospital in Chicago. Smears were made and cultures on plates of human blood agar. Sputum of the watery, frothy kind showed spirilla, fusiform bacilli, streptococci, micrococci catarrhalis, Gram positive diphtheroid bacilli and very minute Gram negative anerobic cocci and bacilli. These were thought to have come from the mouth. Sputum of a tenacious quality was the only kind that gave anything like a pure culture and was probably of lung origin.

Influenza bacilli were found in 62.2 per cent of the sputa examined. The direct smear showed a varied morphology. Most were minute Gram negative bacilli with rounded ends, usually short, sometimes in pairs and sometimes very small. Sometimes they appeared as small short threads, astonishingly numerous—some within the leucocytes.

Invisible by transmitted light, with reflected light the colonies appeared to the naked eye as minute transparent convex points.

There were 12 positive blood cultures out of 90 taken. Three of these showed hemolytic streptococci, six pneumococci and were fatal, and two were positive influenza bacilli and these two recovered.

In four cases the hemolytic streptococci predominated and in three cases a pure culture was obtained from the sputum. All these died. The late appearance of the hemolytic streptococci showed it to be a secondary invader. The influenza bacilli never appeared after the pneumococci had been found.

It is interesting to note that the influenza bacilli were found much more frequently at the beginning of the epidemic than later on, and the pneumococci vice versa.

A comparison of reports of the bacteriology of the epidemic at other localities showed that while some reports agreed with the findings of these authors others found a predominance of the hemolytic streptococci or of a streptococcus with no effect on the blood.

The authors conclude that "Whatever the etiology of influenza may be, secondary infection plays a most important rule. It seems that in any one group of persons closely associated, the secondary invaders may be quite constant. It is even possible that an organism entering the epidemic as secondary invader may acquire such an increase in virulence that it is able to continue epidemic infection after the original cause has disappeared."

C. B. Drake.

THE DIAGNOSIS OF INFLAMMATIONS OF THE UVEAL TRACT OF SYSTEMIC ORIGIN. W. Gordon M. Byres. (Canadian Medical Association Journal Vol. VIII. No. 7, July 1918) in an exhaustive paper relating to the diagnosis and determination of the cause or causes underlying uveal inflammations of systemic origin finds in a series of 25 cases that focal infections are the aetiological factors in iritis, cyclitis and the choroiditis.

It would seem in many instances almost providential that mild uveal inflammations occur to warn the patient of grave systemic disease.

Grounded in the pioneer work of Pasteur and its brilliant interpretation by Lister and advanced more perhaps by the appreciation of the systemic manifestations of several generations, workers have in recent years thrown a flood of light upon the active part played by focal infections in the production of occular metastases and of metastases in other parts of the body.

The outstanding fact as regards aetiology is however the important role played by focal infections, not only on account of the clarification which it has brought to this subject but because of the therapeutic possibilities the discovery has opened up.

These points are well illustrated by the valuable findings of Irons and Brown based upon a study of one hundred cases of iritis in which every modern method of research was brought to bear upon the elucidation of the aetiology.

The author analyzed the findings in the last twenty-five cases from private practice in which he has been able to have a satisfying systemic examination carried out, the figures are as follows.

Syphilis	3 cases	12%
Tuberculosis	4 cases	16%
Gonorrhoea	0 cases	0%
Sinuses	2 cases	8%
Teeth	5 cases	20%
Tonsils	1 case	4%
Gall Bladder	1 case	4%
Genito-Urinary (non Veneral)	1 case	4%
Combined Infections	4 cases	10%
No cause found	4 cases	16%

The combined infections were chronic bronchitis, pyorrhoea and alveolar abscesses and diabetis one case, syphilis and teeth conditions one case, sphenoiditis and gastro-intestinal stasis one case, tuberculosis and tonsillar infection one case.

But while these figures are interesting and important as illustrating the points I have mentioned it is felt they are inadequate for final conclusions, I have quoted them particularly to show that an investigation into the causes underlying inflammation of the uveal tract resolves itself into a search for (a) some systemic disorder of which ocular disturbance is an expression or (b) some focus or foci of infection originating the uveitis by way of metastasis.

I should like to invite a general expression in regard to the extent, sequences and standardization in these examinations. As a starting point for discussion then it seems to me that in the order mentioned the following should be the minimum required.

1. A thorough general examination of the body by the internist or practitioner, which shall include an inspection of the faeces, a complete urinalysis and blood examination. In this examination great emphases should be laid on the history in view of the importance of establishing a past relationship between the ocular disease and some one of the known aetiological possibilities.

2. A Wassermann test. Because of the important role played by syphilis in diseases of the uveal tract I have almost uniformly since its introduction made the Wassermann test a part of the routine examination and my experience has only strengthend this resolution.

3. Examination of the nose and accessory sinuses the throat and the teeth by specialists to supplement those of the general practitioner.

It is a matter of wonderment looking back that we did not sooner appreciate the possibilities of infection from these fields in view of the opportunities for bacterial development in crypts of tonsils and adenoids, in crevices annd pockets about decaying teeth and in the cavities adjacent to the nose often so imperfectly drained and prone to closure.

4. The reports among others of Brown and Irons in which the iritis was associated with non-veneral infections of the genito-urinary tract.

5. Certainly in the absence of satisfying data and perhaps as a routine measure, specific tests for tuberculosis will now be instituted having regard always to the recognized contraindications.

It should be of equal importance in these investigations to seek out all the causes that tend to lower the natural combative forces of the body. Following these lines our problem leads us into the broad fields of preventative medicine the aim of which is to help man by placing him in a better moral and physical environment. GEORGE C. DITTMAN.

POLYPOSIS OF THE STOMACH. D. C. Balfour, M. D., Rochester, Minnesota. (Abstract of paper published in Surg., Gynec. and Obst., 1919, XXVIII, 465-467.) The writer reports the only case of the rare benign tumors of the etomach, gastric polyposis, which has been found in approximately 69,000 abdominal sections at the Mayo Clinic. The findings of the case history are briefly as follows:

The patient, a man aged 31, had suffered from periodic anorexia for eight years; during the last three years, cramp-like pain, beginning in the right and in the left hypogastrium and radiating toward the midline of the epigastrium, which appeared when the stomach was empty, had begun at increasingly shorter intervals after eating. There were no subjective symptoms of hyperacidity, no nausea, vomiting nor evidence of gastric bleeding. The patient had kept the pain at a minimum and nutrition practically normal by frequent eating. The physical examination was negative. The possibility of gastric or duodenal ulcer was excluded by the absence of free hydrochloric acid in the chemical analysis after the test meal. The pre-operative diagnosis of polyposis of the stomach was made by an x-ray examination which revealed a diffuse, mottled appearance of the entire pyloric end of the stomach. At operation on palpation a soft doughy thickening of the wall of the normally appearing stomach was found extending from the pylorus to a line about five inches above; the lines of demarcation which were quite distinct corresponded with those of the roentgenograph. About two-fifths of the stomach was removed; continuity was reestablished by antecolic end (gastric) to side (jejunum) anastomosis. "Immediate examination of the tumor showed a most typical example of the condition which has been described as gastric polyposis. Examination of the mucous membrane of the stump of the stomach showed that the polypoid changes did not entirely cease at the line of resection, and that small globular masses were present at various points on the mucous membrane, particularly along the summit of the rugae, which in turn were very markedly hypertrophied. This finding created some uncertainty as to the ultimate result, but it is not unreasonable to hope that the removal of the greater portion of the diseased tissue will have a curative effect on the isolated tumors that were not removed." The patient made a very satisfactory recovery.

Examination of the stomach showed more than 250 tumors of various sizes distributed over the entire surface of the highly congested mucous membrane the only layer of the stomach wall exhibiting changes. The tumors were globular, about the size of a hazel nut, arranged in rows, between which were a few much smaller globular elevations, in the transverse axis of the stomach, soft and velvety to the touch, and microscopically not suggestive of malignancy. Microscopic examination showed no signs of malignancy, but mostly tremendously hypertrophied mucous membrane.

Careful study of the case did not give any clue to to the etiology of gastric polyposis. Emphasis is laid on the fact that the x-ray alone made the correct pre-operative diagnosis possible. The writer concludes that polyposis of the stomach seems to have sufficiently peculiar characteristics to classify it as a separate entity which should not be confused with single polyps or with the usually malignant polypoid masses occasionally found in the stomach.

BOOK REVIEWS

CLINICAL MICROSCOPY AND CHEMISTRY. (F. A. McJunkin, M. A., M. D. W. B. Saunders Co., Philadelphia. $3.50).

In the preparation of this book the author has made free use of certain original publications in the field of Pathology, Histology, Bacteriology, Clinical Diagnosis and Pathological Technique. The work especially emphasizes chemical, bacteriological, serological and pathological methods while lengthy clinical descriptions accessible in text books on clinical medicine are omitted. This volume is not materially different from many of its class but will prove satisfactory enough.

P. D. Berrisford.

SYMPTOMS OF VISCERAL DISEASE. B., Francis M. Pottenger, A. M., M. D., L. L. Dy F. A. C. P. C. V. Mosby Co., St. Louis. 1919. Price $4.50.

The author says in his preface that after more than twenty years of study he is convinced medical specialties are misnomers, that disease cannot be divided into this or that organ, but the human body must be taken as a unit.

The volume treats almost entirely of so called "viserogenic" reflexes together with discussion of the "viscerotrophic" reflex.

The book is divided into three parts, the last part being devoted to a study of the "vegetative nervous system."

The volume is well written, print and paper good

H. J. O'Brien.

AN OUTLINE OF GENITO-URINARY SURGERY. By George Gilbert Smith, M. D., F. A. C. S., Philadelphia and London. W. B. Saunders Company, 1919. Cloth $2.75 net.

This book provides the connecting link between the general practitioner and the urologist. While not definitely drawing the line between the general practitioner and the specialist, it enables the general practitioner to determine what he is capable of handling to the best advantage. The various diseases of the genito-urinary tract are taken up in a clear, concise and simple manner, giving their symptomatology and pathology together with an intelligent working foundation of their treatment. The chapter on technique makes clear many small points, such as endoscopy and cystocopy which, heretofore, have been rather hazy in the mind of the average physician. Taken altogether this book deserves a place in every medical library. C. K. Williams.

ROENTGENOTHERAPY. Albert Franklin Tyler, B. Sc., M. D. C. V. Mosby Co., St. Louis. $2.50.

This comparatively small volume by a man of some experience, gives all of the essentials and none of the non-essentials pertaining to the method and scope of this therapeutic agent. Emphasis is laid on the neccessity of massive doses particularly for deep therapy and the need for proper filtration. The exact amount of filtration is given in detail for each of the malignant and many non-malignant skin conditions treatable. A rational report of this valuable means of treatment includes numerous case histories and illustrations. Every physician would profit thru the reading of this excellent work altho it is intended for those interested in the treatment of cancer and skin conditions. C. B. Drake.

LICE AND THEIR MENACE TO MAN. By Lt. LL. Lloyd, R. A. M. C. (T) Published by the Joint Committee of Henry Frowde and Hodder & Stoughton at the Oxford Press Warehouse, London.

Much attention has been given of late to that lowly creature the louse, a true enemy to man and beast. The propagation of such formidable maladies as relapsing and typhus fever, yes, and even trench fever are charged against it. Appreciating what a menace the louse tribe proves to the human economy the author has produced a well written book which deals in detail with the structure of the body louse the life history and habits of the body louse, the dissemination of the body louse and lousiness, disinfestation (very important), the head louse, the body louse, the crab louse, (why go on with this lousy business when you can read it all in the book).

P. D. Berrisford.

MILITARY SURGERY OF THE EAR, NOSE AND THROAT. Medical War Manual No. 8. (By H. W. Loeb, M. D., Major, Medical Reserve Corps, U. S. A. Published by Lea & Febiger, Philadelphia and New York, 1918).

A review of the surgical literature of the present war dealing with injuries of the ear, nose and throat has been nicely summarized by H. W. Loeb in this little manual. Elementary principles have been omitted for it was assumed that commissioned otolaryngologists for whom the book was especially written were well versed in the rudiments of their specialty. This publication is well worth reading for one who is interested in this branch of war surgery. P. D. Berrisford.

MATERIA MEDICA AND THERAPEUTICS FOR NURSES. By John Foote, M. D. 3rd edition, 1918. J. B. Lippincott Co., Philadelphia and London.

That this book holds a prominent place among tests of similar nature is attested by numerous reprintings and editions. In the new revision the official latin names and drugs have been added and in addition a reference table containing the official name of each drug or preparation recognized in the European pharmacopoeias. There has also been introduced general reference material including formulas of preparations useful in hospital and private nursing, as well as condensed information about newer antiseptics employed in European military surgery, practical disinfection, toxicology and therapeutic action. P. D. Berrisford.

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ORIGINAL ARTICLES

MEDICAL EDUCATION AND THE WAR*

By M. G. SEELIG, M.D., Col. M. R. C. U. S. ARMY
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I have selected as a topic, Medical Education and the War, because all of us are interested in the problems of medical education, and because, now, of all times, is the most appropriate for an inquiry into the lessons of advantage, that we may draw. Never before in the world's history was medicine called upon so peremptorily to perform, and never before has her performance been more concretely measurable.

In order that we may be perfectly clear at the outset, and start off on the common ground of understanding each other, let me say that I believe that American Medicine—and I speak of American Medicine, not in the chauvinistic sense, but only because it is American medical education that concerns us this evening—that American Medicine met the call in such fashion as to leave room in the mind for only two emotions, one of pride of accomplishment, and the other of studied effort to assure even greater performance if future need ever arises.

Lest this studied effort be planless and prolix, let us consider the relationship between war and medical education a dual one. In the first place, the influence of medical education, as it stood in 1917, on the conduct of the war; and in the second place, the possible influences of the war on medical education of the immediate future.

With the American participation in the war, there arose out of the night, as it were, the need of a medical personal over one hundred times larger than that of the regular army medical corps. This numerical expression in itself means nothing, for it was not merely 40,000 medical *men* that were needed, but 40,000 medical *officers,* prepared to meet the medical problems of warfare, to acquaint themselves with war medical data already accumulating for two years in French and British hospitals; to mobilize their resources so as not to leave out of mind the needs of a civilian population, and finally, to safeguard the ultimate source of medical supply, by consideration for the medical student body. Surely, this was a problem of staggering proportions. The difficulty was heightened by the fact that the problem had to be worked out with material already on hand. It takes years to make a doctor. The doctors already made therefore, were the only ones to be thought of in 1917. It may interest you to know how the Surgeon General proceeded, confronted as he was with the necessity of using the ready made article rather than the hand tailored variety.

Time will not permit a full description of the working plan and activities of the Surgeon General's Office as a whole. 'Twill serve, however, to describe to you, the workings of one division of the office, and I shall select that division, concerning which I have the most intimate knowledge—the Division of Surgery. This division was in charge of a regular army officer under whom were coordinated several reserve officers. As consultants to the officer in charge, there was an advisory board of reservists, made up of the flower of American surgeons. By co-operation with the Council of National Defense, the American Medical Association and other similar agencies, the Division of Surgery was put in possession of the names of every qualified surgeon in the United States. By highly developed, concerted effort, the personnel officer of the Division of Surgery was able to record the professional qualifications and character of a large proportion of these men and to combine this data with ad-

*Read at Minneapolis, Minnesota, at the Clinic Week Meeting May 6-9, 1919 of the Hennepin County Medical Association.

ditional information regarding age, type and percentage of surgery practiced, institutional affiliations and similar significant details. All this information was codified. Based on it, the various surgical officers were graded in one of four classes, namely, as A, B, C, D, men. Measures were instituted to establish intensive short courses of surgical instruction at various civilian and camp centers, in order to improve the surgical status of lower grade men; and a simple system of reports was devised whereby the Division of Surgery was kept constantly informed of the professional and military qualifications of the men on its rolls. The concrete results of this program were admirable. Far more admirable than any one had the right to hope, in the face of the anxious, fitful spirit of haste that literally filled the air of those parlous days. It was a human program and was characterized therefore, by the frailties of human effort, plus the added elements of feverish activity and the necessary limitations imposed by purely military exigencies.

Men of grade A usually measured up to capacity. When they did not, it was usually due to other causes than professional inability. Men of the lower classifications grouped themselves into competents, indifferents or medioeres and incompetents. It is not fair to refer competency or incompetency totally to educational facilities, but other things being equal it is logical to assume that better medical education assures greater professional capacity. This much is certain—achievements were in large measure referable to the professional capacity of the better men; failures were in equally large measure due to lack of professional qualifications, and this lack in its turn, was referable in many instances to faulty fundamental medical training.

Brigadier General Munson, in an address before the Council of Medical Education of the American Medical Association attempts to correlate the weak elements in the Medical Reserve Corps Organization with the broader question of Medical Education. His inquiry is timely and even tempered. As published, the address, although according generous praise to the Reserve Corps, may be said to fail tactically in that it emphasizes reserve corps delinquencies in such fashion as to permit the reader implicity to draw on unfavorable mental contrast between this corps and the corps of regulars. Yet withal General Munson's statement is so dispassionate, and so judicial in tone that it does not seem to lend itself as a target, for the type of polemic that has been aimed at it. Sharp analysis will only reveal as the substance of General Munsor's beliefs, the fact that the American medical profession was an undisguised blessing to the army medical corps, that the ranking men of prominence in civil medicine were, in many instances, mainstays, professionally speaking of the medical service; that from these men down, medical officers could be graded to the ulimate role of total unfitness; that medical educators might draw a moral from this, and finally, that an improvement in educational methods might be hoped for as a factor in raising the index of professional efficiency. Neither more nor less than this could be said in peace times regarding medical education and the medical profession, and exactly as much may be said at all times regarding educational methods and graduates in any other profession than medicines.

My own personal contact with medical activities in the United States military hospitals, led me to reach conclusions not varying materially from those reached by General Munson. Possibly, and if so, quite naturally, I have taken more pride in what I construed as the average high level of medical accomplishment and medical zeal, but I was ever mindful of the low grade of professional qualification that characterized a by no means negligible proportion of the medical reserve corps personnel. As I view the matter, faulty methods of education should not alone be made responsible for every discoverable flaw in the medical corps It is one of the prominent factors, but only one. Viewing the situation in the broadest possible perspective, we may say that ineffectiveness is referable to any or all of three causes—in the first place, and by all odds the most important, a faulty medical education, in the second place, a failure to progress and improve opportunity, and in the third place, a military non-adaptability. Regarding the faulty, inadequate or actually vicious methods of education, no comment is necessary. Failure on the part of men to progress and improve opportunities after graduation and unwillingness to keep step with the march of medical progress is an elusive factor, best visualized in mass, un-

der conditions such as the world's war developed. There is no standing still or marking time in medicine. Laurels are in no more certain way bedraggled than by sitting on them, and beyond all question of doubt, a goodly number of the medical reserve corps who had earned laurels at graduation, were sitting on them when the flag and trumpet called in April 1917. Finally, military non-adaptability comes in for a share as causing cause. In more ways than one, the regular army authorities, both the Regular Medical Corps and General Staff, failed to cultivate a spirit of military adaptability in life long civilians, and in equally many ways, did they actually do much to intensify an existing nonmilitary turn of mind. This is neither the time nor place to discuss what often amounted to military obtuseness, but let us not fail to consider it in our reckoning.

All in all then, the status of medical education at the outbreak of the war, was such that the profession of America was equipped to step into a breech suddenly opened, shoulder, unprepared, a huge burden, and carry on in a fashion second to no other branch or arm of the military service. More than this, the Medical Reserve Corps was the only branch of the service, untutored though it was in the essential arts of war, that by the very nature of things, was ready for and actually in service with our allies long before our arsenals had guns off the lathes, or our Quartermaster had wool off the looms.

Weaknesses there were, of course, and we have seen that these may be referred to three basic causes. In many instances, a poor, fundamental medical education, in equally many if not more instances, a poor or totally absent post graduate advance, and thirdly, the baneful influence of military martinetcy. This third factor, we have agreed to pass over. What defects may have existed in the fundamental methods of medical education concern and influence the entire medical brotherhood; it is an all inclusive factor. The failure to improve ones medical opportunities after graduation on the other hand, influences directly only those who constitute the slothful, laggard class; less directly, the evil influence concerns medical institutions and that portion of the public served by unprogressive doctors. Among the institutions concerned, is primarily the medical corps of the regular army. The striking spirit of generosity with which the Surgeons General acknowledged their dependence upon the medical reservists, is an expression of the always manly character of the army, but it does not furnish cause for the army's failure to provide its medical personnel with clinical opportunities in times of peace. No other agency is in a better position than the government to do this very thing, and yet, so notably did the army neglect this patent duty, that if one may credit a fairly common expression of opinion, there were only a few especially competent clinical surgeons in the entire regular medical corps, when war was declared. All of us, I take it, have a proper and fitting sense of appreciation of the importance of administrative duties. But none of us, I am quite sure, would consent to the elision of the component word, medical, from the phrase—medical administration. This much is certain that if the artillery branch of the service furnished as little actual contact with the practical side of ballistics to its personnel, as the medical branch furnished practical clinical opportunity to its officers, Senator Chamberlain would have found much desirable tinder for his flint.

I think we may reasonably expect that one of the lessons of the war which will be taken to heart early, is that one pertaining to the medical education of the regular corps personnel. I think we may more than hope this, I think we may even expect that Congress will have the vision to support the Surgeon General liberally, in the execution of plans already directed towards this end. I think we may with more than blind hope, look forward to the establishment of a type of post graduate medical school at Washington, built around Walter Reed Hospital as a clinical center, and flanked by institutions for the development of all the cognate medical studies. Such a plan will serve well in the development of the medical corps of an army of 500,000, if such an army be created, and who of us here dare predict how potent a factor it would constitute in the medical fabric of the nation?

We may say therefore, with a fair degree of assurance, that insofar as medical education touches the heart and soul of the army itself, the war will in all likelihood serve as a starting point for a new movement, a movement toward better education and medical uplift—a move-

ment, that we shall be able to classify among the many other hoped for imponderable blessings that will in part, constitute solace for unforgetable tragedies.

But what will be the influence of the war in correcting those defects of a general medical education—education in the fundamental and clinical undergraduate medical studies? Here, I believe we may not so readily beguile ourselves with unrestrained hope. President Lowell of Harvard has said that of all sciences, education is the last to progress. I fear it will take more than a world's war to introduce a spurt that will be manifest forthwith. Indeed there are signs ominously significant, of a retrogression. The salaries of educators always small, have not appreciably advanced even in the face of unprecedent advances in the cost of the ordinary necessities of life. The fundamental branches of medicine have been well taught, as a general rule, in the better American schools. In my own mind, it is a serious problem, whether the teaching career now offers sufficient charm to attract men in the face of what amounts, in many instances, to necessitous material sacrifice. Within the past month, one of the leading anatomists of this country, director of the department of anatomy of one of our leading universities, confided to me that he dared not burden his conscience with the responsibility of either stimulating or urging young men to take up anatomical teaching and research, as a career. If some of the prophets be true prophets—and praise be that they may be—and if therefore, the one great outflow from this war will be the ushering in of an era of humanism, is it too much to hope that the Universities will direct a small portion of their vast energies toward furnishing teachers a comfortable living wage?

All this of course, does not touch the great problem of clinical teaching. Clinical teachers, almost without exception, earn their living by practicing, and they teach as an avocation. I may say in passing, that for fifteen years, I have been teaching one or another branch of clinical surgery and I have been teaching all this while as an avocation. During all this while, I have never been a teacher in the sense that I might have been, had I been free of the incubus of practice. This is an ill selected opportunity to debate the necessity for full time clinical teachers, but it is an appropriate place to say that we must content ourselves to admit that if the professors of surgery and medicine, furnished with a liberally filled quota of surgical wards, may in addition, gather shekels from and divert his attention to neighboring, outlying and far distant private rooms, then, by all processes of normal ratiocination, the professors of physiology, anatomy and pathology may do likewise. Indeed they have the better right. They have more time to practice. As teachers, they must needs command only their own fields, whereas the clinician must command his own field while constantly keeping abreast of and furbishing up on fundamental advances. According to by own personal analysis, many of the weak spots in the army service, pointed out by General Munson, are directly referable to the fact that clinical teaching as a career, is practically nonexistent. As long as it is not existent, the medical school output is certain to mirror that fact. Here and there may be found the superman, who can adequately direct a department of clinical medicine or surgery and engage in private practice. He is a marvel to me. So often have I been too dog tired to prepare properly for, or to hold a planned clinic or lecture, that the pure question of what the efficiency expert calls industrial fatigue is, for me, an indisputable answer to him who would with a wave of the hand, argue the full time clinical teacher out of court. I believe in a healthfully large part of the Bible, and in nothing do I believe more fully than this: "The wisdom of a learned man cometh by opportunity of leisure; and he that hath little business shall become wise." Becoming wise is the first step in imparting wisdom to others.

What I hope to see evolve from the war is an appreciation by us—the clinicians of the country,—of the fact that we must delegate clinical teachings to those willing and equipped to undertake it as a career. Place the responsibility of general planning and direction on their shoulders and then contribute what aid we may in proportion both to our time and qualifications. And if as a result of the war, this comes to pass in addition to the other consummations already devoutly wished for, surely, will we be able to say that war, the hateful breeder of evils, may also bring benefits in her train.

RECURRING INGUINAL HERNIA*

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No surgical procedure is more uniformly satisfactory than that of the operation for the radical cure of inguinal hernia. This is undoubtedly due to the fact that at least nine of ten cases are of the indirect type and hence favorable for surgery†. Probably about 75 per cent of all indirect inguinal hernias are the result of a persistent congenial sac without any other congenital abnormality or atrophy in the regional tissues.

It is unfortunate that in most published statistics the distinction is not more clearly drawn between the various types of inguinal hernia, since the one type, and fortunately the most common one, is readily cured by almost any form of operation providing that an obstruction is placed in the neck of the sac at the level of the internal ring. This can be accomplished by ligation, compression by the tight closure of the canal or plugging from the inside as is occasionally attempted by pseudo-surgeons who inject paraffin. On the other hand, the direct inguinal hernias, the large scrotal hernias of long standing of whatever type, the so-called sliding hernias, and the recurrent hernias are satisfactorily treated by some form of plastic closure of the inguinal canal as well.

I wish to emphasize the vast difference in the curability by operation of the various types of inguinal hernia and to urge the advisability of using some form of transplantation of the cord or a plastic closure of the floor of the inguinal canal in at least all the difficult cases. Personally, I believe that a technic which is preferable in difficult cases is also preferable in simple cases. The additional few minutes required and the satisfactory results obtained in every respect, make the more radical operation advisable in practically all cases. Our own statistics 7,016 cases (this includes 1,652 cases reported by Dr. Judd in 1907) show a little less than 1 per cent of recurrence following the cord transplantation, and a little more than 1 per cent following the anatomic operation. In Coley's statistics the difference is even more marked, with 0.6 per cent of recurrence following the Bassini operation and 4 per cent following the Ferguson operation.

Five thousand three hundred sixty-four inguinal hernias have been operated on in the Mayo Clinic from 1907 to the first of this year (1918). Two thousand two hundred thirty-four were right inguinal, hernias, 1,430 left inguinal, and 850 bilateral inguinal. Three hundred thirty of the operations were done for recurrence; 260 for recurrence following operation done elsewhere, 70 following operations in the clinic. This included twenty-nine bilateral recurrences, which were counted as 58 operations. Two hundred fifty-eight of the 330 patients with recurrence had had one previous operation, 44

*Presented before the Minnesota State Medical Association, Aug. 30, 1918, Duluth, Minn.

†Davis in a splendid report of the end results in 1500 cases operated on in the Massachusetts' General Hospital reports 94.2 per cent indirect and 5.8 per cent direct.

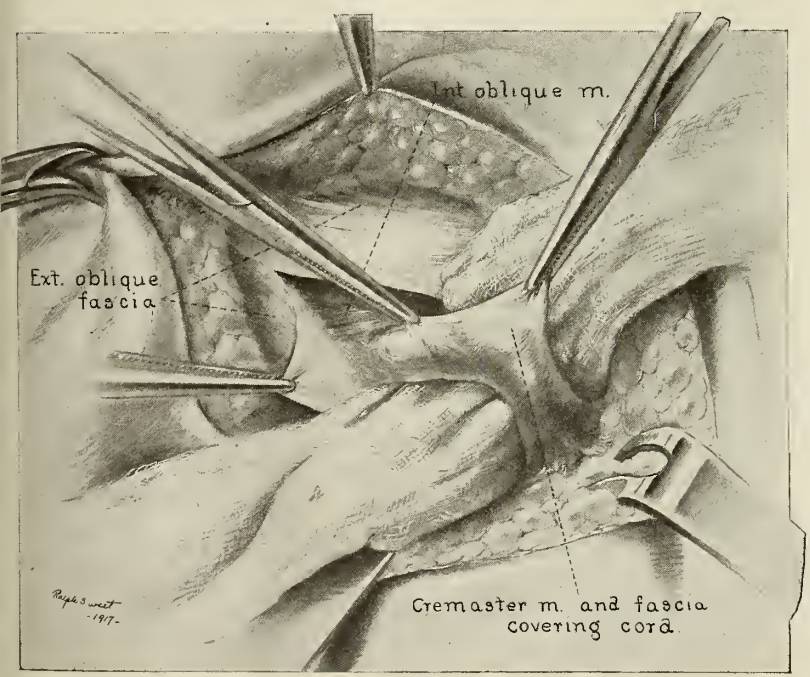


Fig 1. Spermatic cord freed throughout the entire length of the inguinal canal. Coverings of cord held with forceps.

had had two, 20 had had three, and 8 had had four. These figures show distinctly that the more frequent the previous operations the greater the difficulty in securing a radical cure, as the number of cases in which two or three operations are required must be very small. In many instances it is difficult to determine from the history the type of operation that has been done and where the recurrence has taken place, but experience with these cases seems to demonstrate that by far the greater number follow the so-called anatomic or Ferguson type of operation, especially when it has been used in the direct hernia.

Inguinal hernias are believed by the laity, and by many members of the medical profession, to be all of the same type and readily curable if properly operated on. This is an unfortunate impression. The patient should be prepared for the possibility of a recurrence, or on the other hand, he should be told that the hernia is a simple one and that he has a little better than ninety-nine chances out of a hundred for a perfect result if a careful pre-operative examination is made. The hernias that are particularly difficult to cure are those, either direct or indirect, that are associated with a poorly developed internal oblique muscle, and this type can always be determined by a digital examination through the external abdominal ring. The normally developed internal oblique and conjoned tendon (when it is present) can readily be felt and the distance between these structures and Poupart's ligament accurately estimated. In the other cases, the reverse is true, and in the worst cases no resistance is encountered until the edge of the rectus is reached. Erdman (1917) in a review of 148 cases found that there were but two recurrences in 102 indirect inguinal hernias, and no less than 7 recurrences in 46 of the direct type.

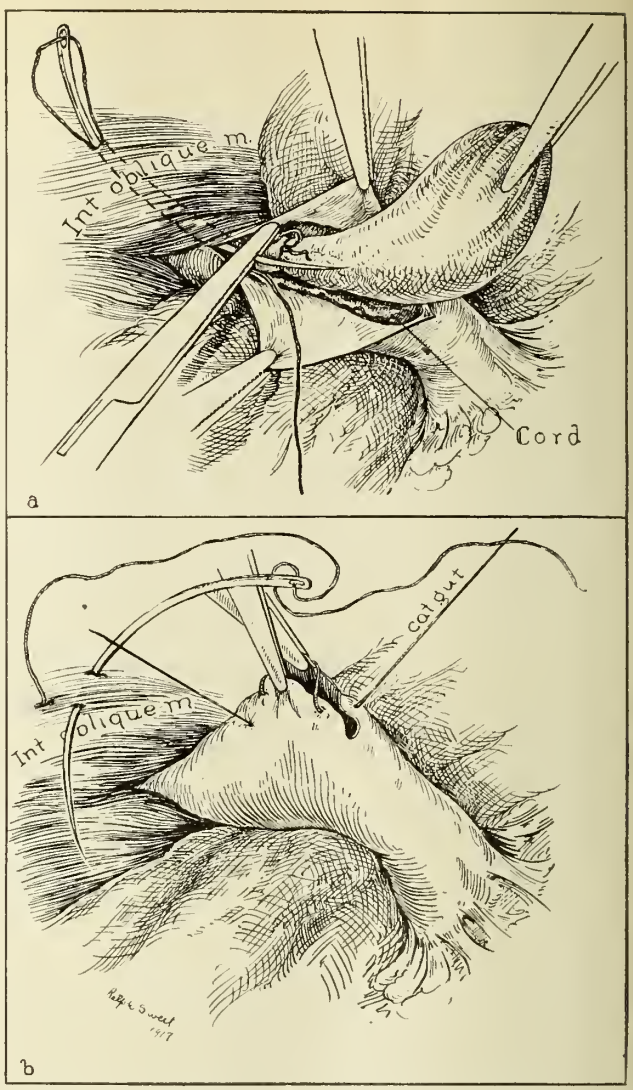


Fig. 2. (a). Hernial sac isolated. Neck ligated and suture carried through the internal oblique above the internal ring.
(b). Sac excised. Closure of cremaster preliminary to fixing the neck of the sac well above internal ring.

Another hernia difficult to cure and yet which belongs to the indirect type, is the one so often found in old men who have a hernia of long standing with a large mass of omentum or omentum and bowel descending into the scrotum, and who have probably worn a truss for many years with complete satisfaction until the last few months. In these cases the deep epigastric vessels are drawn down almost to the crest of the pubes and the internal abdominal ring is directly behind the external abdominal ring, with marked enlargement of both rings, and the surrounding tissue is of a very poor quality for plastic work.

The direct-indirect, saddle bag, bilocular or pantaloon hernias, as they are variously called, present no difficulties that are not common to all direct hernias, except that it is also necessary to remove the part of the sac that accom-

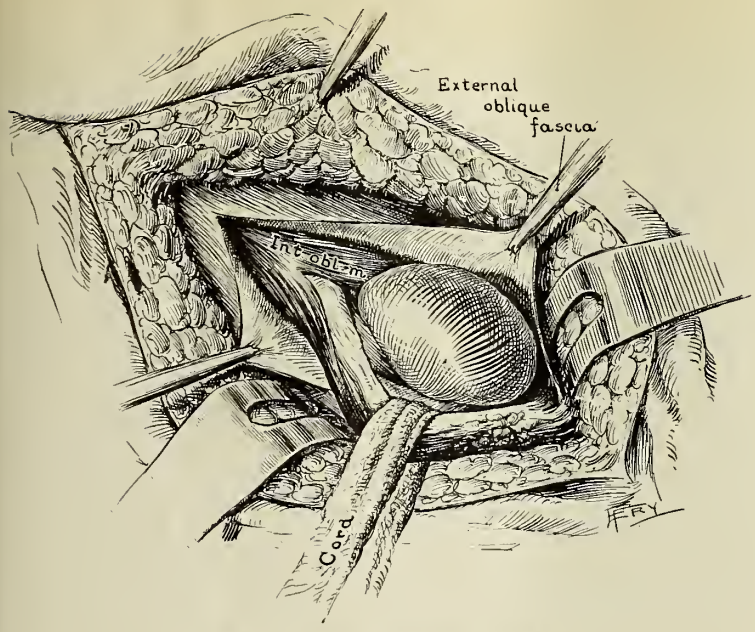


Fig. 3. Direct inguinal hernia.

panies the structures of the cord, as well as to treat that portion which comes through the transversalis fascia below the deep epigastric vessels.

The operation for sliding hernia is always difficult on account of a large internal ring, and after the removal of as much of the sac as possible, the bowel still protrudes and when returned into the abdomen tends to make a direct and constant pressure on the line of closure of the inguinal canal.

Operations on recurrent ruptures invariably present added difficulties, as a rule increasing with the number of previous operations. It is not at all uncommon to find a direct hernia at the second operation when the surgical findings of the first operation indicate that an indirect sac was removed at that time. These hernias are always associated with a poorly developed internal oblique muscle and in most cases are the result of injury to the nerve supply of the lower fibers of the muscle.

Age Incidence

	Cases	Per Cent
Under 20 years...	8	4.4
20 to 30 years....	69	20
30 to 40 years....	80	24.1
40 to 50 years....	88	26.3
50 to 60 years....	59	18
60 to 70 years....	21	6.4
Over 70 years....	9	2.8

In the 330 cases of recurrence only 8 patients were under 20 years of age and all gave a history of recurrence having taken place immediately following the first operation. None of these 8 paitents had been operated on by us and, therefore, we have no record as to the type of the hernia at the time of the first operation. It is an interesting fact that a great many patients are operated on during this period. It was found that 88 cases or a little more than 25 per cent of the total number of

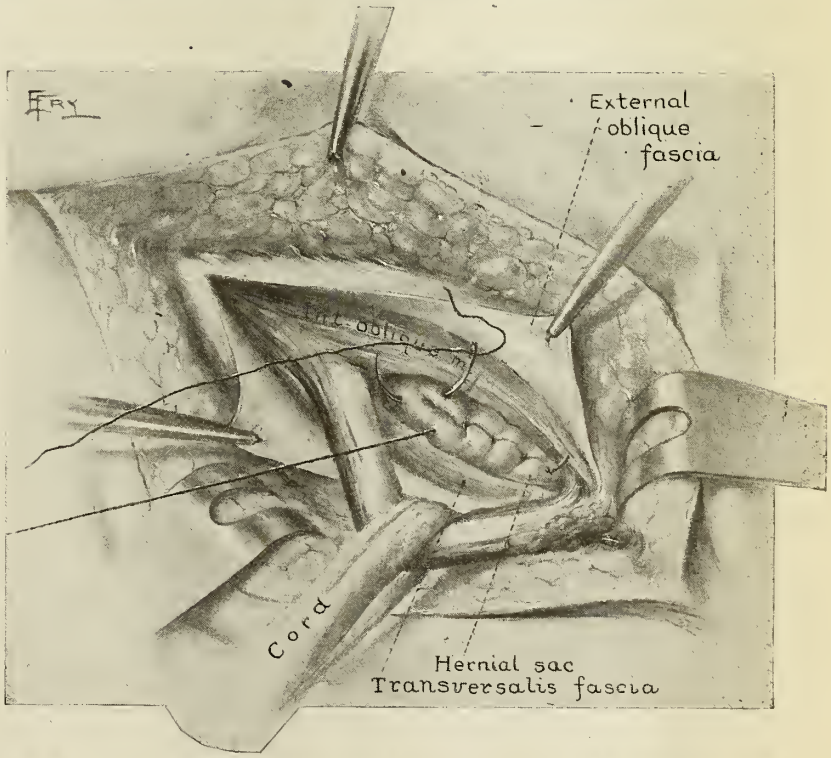


Fig. 4. Sac of direct hernia inverted without removing any of it and the base with adherent preperitoneal fat sutured.

recurrences, were in patients of more than 50 years, and another 25 per cent of the total number occurred in the fourth decade; that is, more than half of all recurrences were in patients over 40 years, and practically all published statistics show that only about one-fifth of all hernia operations are on patients of this age or over. This clearly shows that any type of operation is satisfactory on children and young adults, but for older persons every precaution should be taken and the strongest possible closure made. John B. Murphy reported 1 per cent recurrences in 74 patients below 20 years of age, 4 per cent between 30 and 60 years, and 9 per cent were more than 60. The chief reason for the marked difference between the curability of hernias in the young and in patients past middle age is no doubt owing to the fact that the tissues heal more readily in the former and the inguinal rings are little, if any, dilated and, in addition, direct hernias are rare in persons below the age of 20 years.

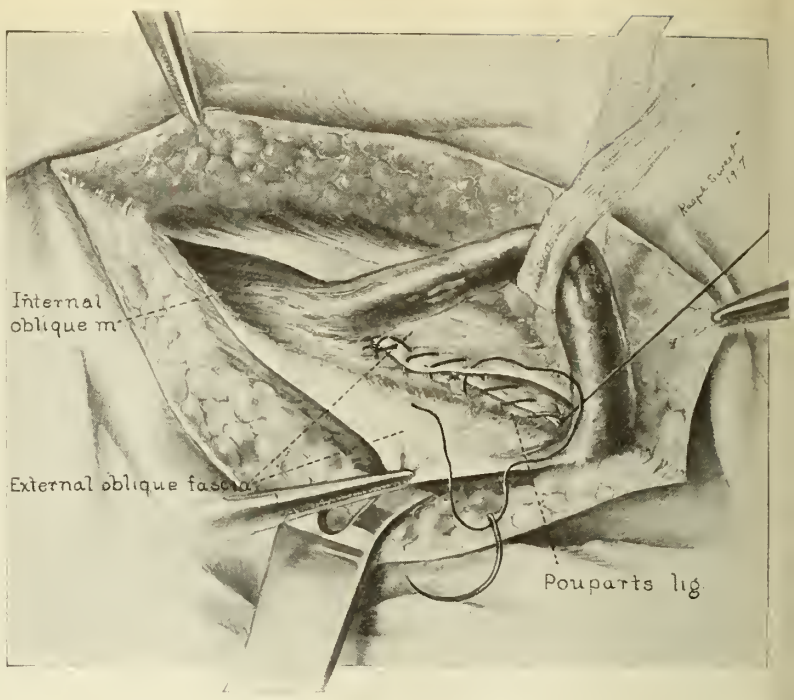


Fig. 5 Conjoined tendon and internal oblique sutured to Poupart's ligament with continuous chromic catgut.

In 1908 Coley reported upwards of 2,200 operations for indirect inguinal hernia in children. In our series were two children with direct hernias, but they had both had previous operations, and in all probability the weakness in the inguinal canal resulted from injury to the nerve supply of the lower fibers of the internal oblique muscle.

A great many indirect hernias in patients more than 40 years are also difficult to cure because they have existed for a long time; the rings gradually dilate to many times their normal size, with more or less atrophy in the abdominal wall. Often such patients lead a sedentary life, hence, there is an unusual amount of fat in the muscle. Again, a great many have worn trusses, and a pressure-atrophy of the regional muscles results.

In all plastic surgery, the important feature is to get apposition without tension and the

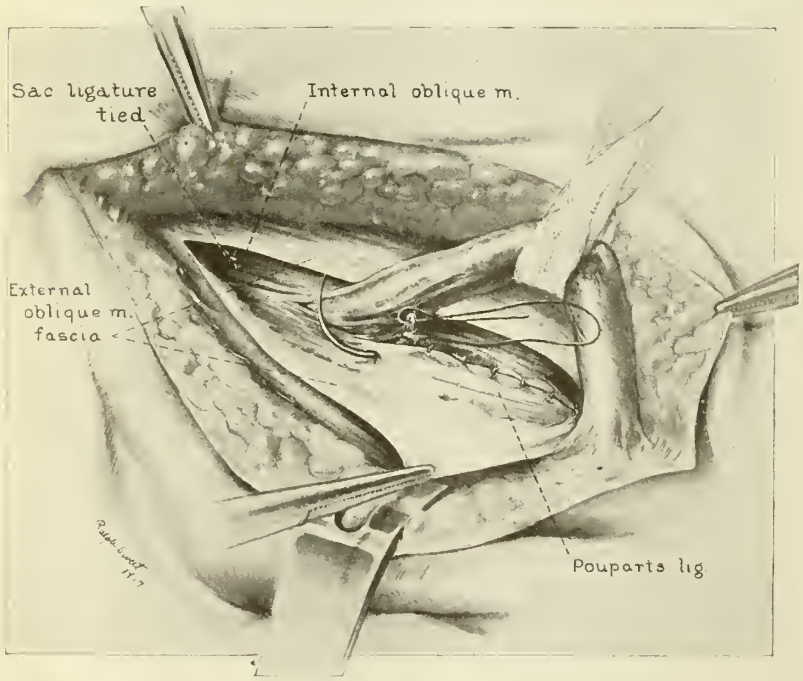


Fig. 6. Upper layer of external oblique sutured to Poupart's ligament.

strength of the suture material is not of much moment, provided it will stand the ordinary strain that a wound is subjected to during a vomiting or sneezing spell. No. 2 catgut meets this requirement. Besides being strong enough to begin with, it must also remain strong enough until healing is well established, which means from ten to fourteen days. For this reason twenty-day chromic catgut is preferable. The use of heavier suture material does not, in my opinion, add anything to the security of the operation and frequently predisposes to trouble and recurrence. I have had no experience with filigree or silver wires except in taking them out. I do not believe the use of this material necessary or advisable in any case.

Technic of Operation

The operation I have used almost exclusively for the past five years is a slight modification of the Andrews operation, which in turn is a combination of the Halsted and Bassini principles. The only exceptions to this technic are: (1) to follow the Ferguson technic in all hernias associated with undescended testes and in some instances in infants, (2) to utilize the rectus muscle, according to Bloodgood, in all cases in which the internal oblique is not sufficiently strong, (3) in a very few cases to follow the Halsted technic, and (4) in extra difficult cases, in old men, occasionally to cut all the structures of the cord at the internal ring, close the canal much the same as in the treatment of a ventral hernia, and to perform an orchidectomy. In one case in which the patient had been operated on twice before coming to the clinic, and once by myself, I did not find a definite structure which could be called Poupart's ligament. I removed the cord and testicle and turned up a flap of fascia lata from the thigh, imbricating it on the top of the external oblique with, so far as I know up to the present time (six months), a good result.

For unilateral ruptures the usual oblique incision is made, and in most bilateral cases, the transverse incision, (advised by Judd in 1913) is very satisfactory. The external oblique aponeurosis is incised about one-fourth inch internal to the inner pillar of the external ring. This is then cut across, which gives a good exposure of the contents of the inguinal canal and also leaves sufficient aponeurosis in the lower flap to use later in covering the cord. Care is taken not to injure the ileo-inguinal or ileo-hypogastric nerves, and it is not necessary nor advisable to separate the genital branch of the former from the cremaster, with which it is closely associated. The cremasteric fascia with its enclosed cord structures and hernial sac (if one is present) is first freed from Poupart's ligament and the floor of the inguinal canal is then freed from the edge of the internal oblique and conjoined tendon (Fig. 1).

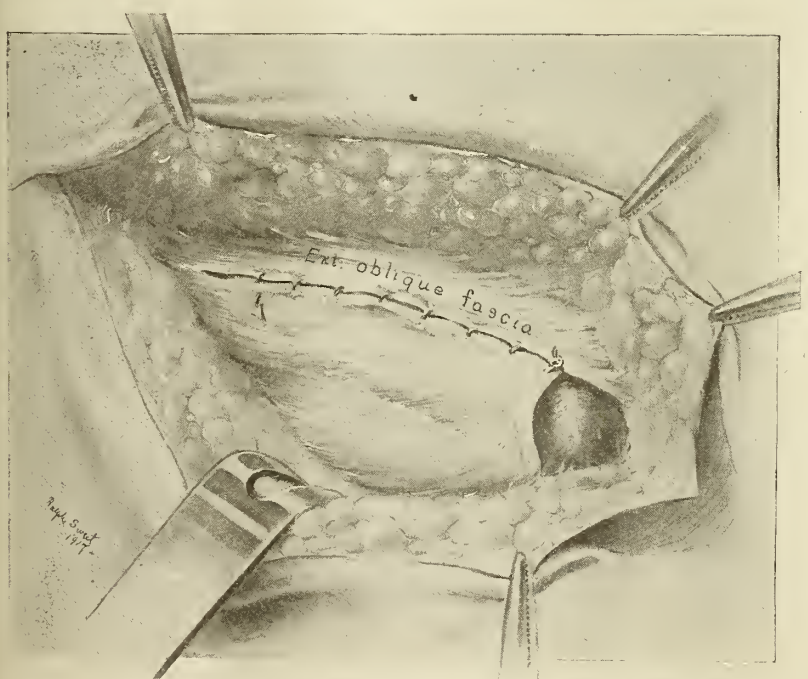


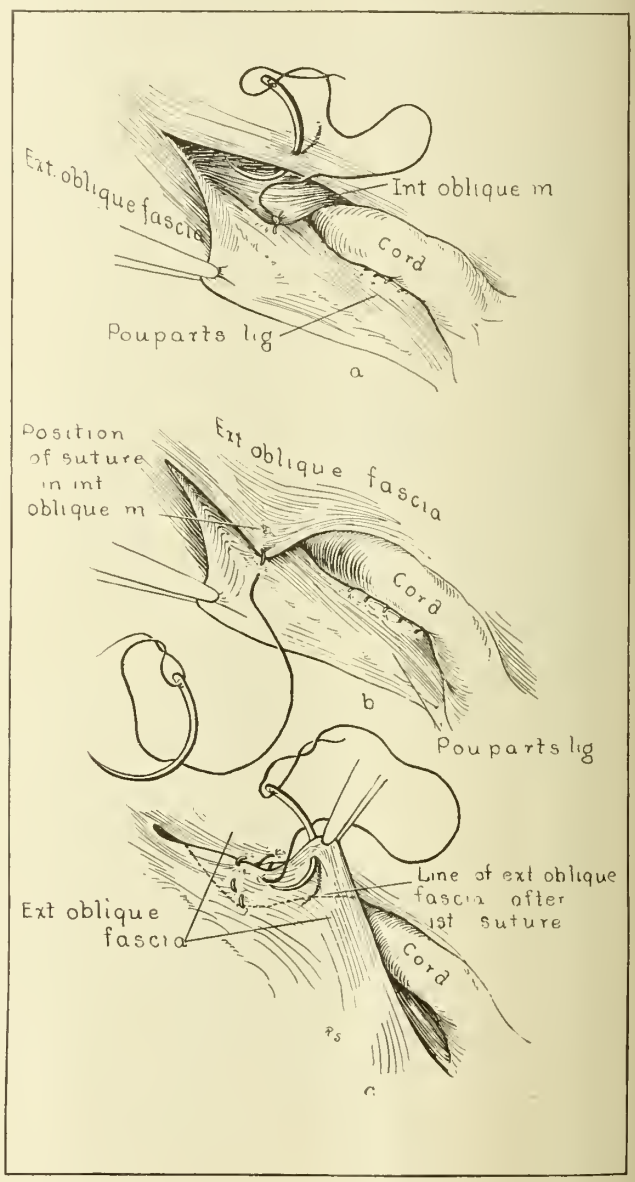
Fig. 7. Cord structures covered with the lower layer of the external oblique aponeurosis.

In indirect hernias the sac may always be found at the level of the internal ring in the interval between the vas, which is to the inner and posterior side, and the vessels which are anterior and external. An incision about one inch in length is made through this covering of the cord at the point and the sac

is located and opened; it is generally an easy matter to reduce the contents and free the sac from the normal cord structures (Fig. 2). If firm adhesions are encountered, rather than to traumatise the cord structures or leave an extensive raw surface which would ooze considerably afterward, I prefer to cut the sac close to its neck, and if the cut end of the distal section is left open, it will not lead to future trouble. The proximal portion may then be treated in the ordinary manner. Any preperitoneal fat tags accompanying the cord structures through the internal ring should be ligated as high as possible and excised. It is important to handle the cord structures as little as possible, in order to avoid postoperative pain and swelling.

The neck of the sac is thoroughly freed from the edge of the cremaster and transversalis fascia and ligated at as high a point as possible; the stump is transfixed to prevent the slipping of the ligature, and the distal portion is cut off. The free end of the ligature used for tying the sac is then threaded onto a large hand needle and by this is carried through the transversalis and the internal oblique muscles as shown in Figure 2 at a point about one and one-fourth inches above the internal abdominal ring. By drawing the neck of the sac tightly up to this point and fixing it there by tying the catgut, the sac is prevented from causing pressure at the internal ring while healing is taking place. This procedure carries out the Kocher idea and is a much safer and simpler method. The opening in the cremaster is now closed and the cord is held out of the way by a piece of gauze while the canal is closed (Figs. 3 and 4). In the cases of direct hernia, unless the sac is large, it is not opened but simply turned in with its covering of preperitoneal fat and a few stitches placed in the base to prevent it from making pressure on the suture line during the process of healing. I have been more particular in this respect since having opened into the bladder in one such case. However, the accident was recognized at once and satisfactory closure was made, the wound healing without drainage.

The plastic closure of the inguinal canal is the most important step in the prevention of recurrences in direct hernias and in all the difficult cases of the indirect type (Fig. 5). The principle generally credited to Bassini of bringing the internal oblique and conjoined tendon down to Poupart's ligament behind the spermatic cord, would probably be sufficient in all cases in which these structures are well developed and the interval between them is not too great. However, additonal security is obtained by bringing the



&Fig. 8. Internal and external oblique sutured to Poupart's ligament above the level of the internal abdominal ring.

cut edges of the external oblique aponeurosis down to Poupart's ligament also, as first suggested by Halsted (Figs. 6 and 7). Additional strength is also obtained by the Andrews imbrication of the external oblique, which, in addition, makes a covering for the cord.

Marked atrophy of the internal oblique is often seen in recurrent cases or when patients have worn a truss for a long time. In such cases it is frequently advisable to utilize either the sheath of the rectus or the rectus muscle itself. I prefer the latter and by freely slitting up the sheath (as a rule about three inches) it is always possible to draw the muscle fibers down to Poupart's ligament without undue tension. In most cases of this type it is advisable to follow Bloodgood's suggestion of cutting the sheath of the rectus posterior to the attachment of the internal oblique, and in this way the use of that muscle in strengthening the closure at the internal ring is not interfered with.

The suture material is of the utmost importance and the use of heavy absorbable and nonabsorbable material is more frequently an added danger than a safeguard against recurrence. The mistake so often made, and frequently hard to guard against, is making the closure under too much tension, with the result that the sutures cut through or strangulate the tissues, and a recurrence results. Once healing is secure, nonabsorbable material remains as a foreign body in the wound and is a weakness rather than a strength.

The closure is started at the bottom of the canal, the first stitch going through the internal oblique (or conjoined tendon when present) close to its insertion into the crest of the pubis and Poupart's ligament near its insertion into the spine of the pubis. When this suture is tied, the structures almost approximate one another throughout the entire length of the inguinal canal, and no tension is required to complete the closure by whipping the internal oblique to Poupart's with about six stitches. A fairly tight closure should be made at the internal ring making sure that there is little danger of constriction of the cord at this point, especially when the natural coverings of the cord are preserved. Figure 6 shows the upper layer of the aponeurosis of the external oblique being drawn down to Poupart's and, as there is a little extra tension at the upper-outer end, an extra stitch may be inserted at this point by tying the free end of the ligature. The approximation of the external oblique to Poupart's is then completed with the continuous stuture, which is finished at the spine of the pubis and tied to the free end at that point.

As an occasional point of recurrence of the hernia is directly above the cord where it emerges through the internal ring I follow Coley's suggestion and put one stitch in the internal oblique and Poupart's at this point, being careful not to injure the ileo-inguinal or the ileo-hypogastric nerves, which lie on the surface of the muscle (Fig. B). Continuing with the same suture one or two stitches are generally placed in the external oblique above the cord, imbricating the lower part on top of the upper, continuing down and enclosing the spermatic cord structures between two layers of the external oblique aponeurosis, as shown in Figure 7.

Hemostasis is very important and after tying all visible bleeding vessels the space between the skin and the external oblique are obliterated as nearly as possible by closing the subcutaneous tissue with a continuous plain No. 1 catgut suture, and by making frequent catches into the surface of the external oblique.

It is not necessary to use tension stitches and I prefer to close the skin with continuous horsehair.

A light gauze dressing is applied and a suspensory bandage put on the scrotum. Most of the postoperative pain and swelling is due to oozing or unnecessary handling of the cord structures and testicle. I do not believe it is ever necessary to deliver the testicle from the scrotum unless the patient has a co-existing pathologic condition of that organ.

The majority of patients are allowed to get up on the eighth day, but in the worst cases, including all recurrent hernias, the patients are kept in bed about fourteen days. Light work is allowed in from six to eight weeks and heavy work in from three to six months.

In our 356 cases of recurrences in which the time of recurrence was recorded, 189 recurred in the first six months, 26 recurred between six and twelve months, 19 recurred between one and two years, and 22 recurred between two and eight years.

If a hernia recurs within six months, either the operation was not sufficient, or the patient over-exercised after operation. On the other hand, recurrences after twelve months are more apt to be due to the development of a new hernia as the result of stretching in scar tissue or atrophy in the muscles. One cause for this is, without doubt, the wearing of trusses following operation, and another cause is injury to the ileo-hypogastric nerve, with resulting atrophy in the internal oblique, which frequently occurs at the time of the first operation and, as Balfour has shown, may also be the result when on the right side, of a gridiron incision for appendicitis.

REFERENCES

1. Andrews, E. W.—Quoted by Murphy. Surg. Clin., 1913, ii, 749-768.
2. Balfour, D. C.—The occurrence of right inguinal hernia following appendectomy. Railway Surg. Jour., 1912, xix, 117-119.
3. Bassini, E.—Nuovo metodo per la cura radicale dell' ernia inguinale. Atti d Cong. d. Ass. med. ital., 1887, Pavia, 1889, ii, 179-182.
4. Bloodgood, J. C.—The transplantation of the rectus muscle in certain cures of inguinal hernia in which the conjoined tendon is obliterated. John Hopk. Hosp. Bull., 1898, ix. 96-100.
5. Coley, W. B.—Hernia. Keen's Surgery, Phila., Saunders, 1910, iv. 17-167.
6. Davis, L.—Complications and sequalae of the operation for inguinal hernia. Jour. Am. Med. Assn., 1916, lxvii, 480-483.
7. Erdman, S.—Inguinal hernia in the male with regard to postoperative sequelae. Ann. Surg., 1917, lxvi, 702-710.
8. Ferguson, A. H.—The technic of modern operations for hernia. Chicago, Cleveland Press, 1907, 336 pp.
9. Halsted, W. S.—Operative treatment of hernia. Am. Jour. Med. Sc., 1895, cx, 13-17.
10. Judd, E. S.—Inguinal hernia; types of operation; results in 1652 cases. Jour. Minn. Med. Assn. and N. W. Lancet, 1908, xxviii, 65-69.
11. Murphy, J. B.—Double inguinal herina; some Italian statistics; technic of the Andrews operation. Surg. Clin., 1913, ii, 749-768.

DISCUSSION

DR. A. F. SCHMITT, Mankato: I have had the good fortune to become more or less familiar with the technic and the work of the writer of this paper, and I feel there is not anything I can say that would add any light to the presentation of this very interesting subject.

It is most gratifying to have so large a number of cases reported with such remarkable results. I wish to emphasize a few points. The treatment of these hernias, not only recurrent hernias but all hernias, is especially important because it is one of the fields in which the pseudo-surgeon or quack has been making bread and butter and really bringing disgrace to the medical profession. When patients with hernia come to us after they have been manipulated by these pseudo-surgeons it is doubly difficult for the best of surgeons to achieve the results that will be both a credit to the surgeon and a benefit to the patient.

The ligation of the sac high up is very imperative and is sometimes neglected. A surgeon gets in a hurry or is hampered with some other condition at the time of the operation, and a hurry up operation is done, hence, that part of ligation of the sac high up is neglected, and it may be potential of a recurrence.

Many of these cases at the age the doctor referred to come to us after haing worn trusses for a long time with pressure atrophy of the tissues, and that coupled with the age of the patient, in which the blood and nerve supply and healing process are somewhat diminished and delayed, is an additional potentiality for recurrence and requires all the more careful technique.

The point the writer made in getting proper approximation of the tissues of the external oblique over Poupart's ligament without undue tension is very valuable, indeed. I feel the cases where I have fallen down in this work have been those where the tension was too great or the ligature too heavy, not allowing absorption early enough, allowing the accumulation of serum, and the undue pressure causing separation and undoing the approximation which I should have obtained and maintained at the time of and after the operation. Splitting of the fascia of the external oblique and slipping the muscle over where the internal oblique is not sufficiently developed or is atrophied allows a sufficient bumper to cover the lower inguinal canal is important. This work can be done in a short time.

As a matter of habit, I make it a rule not to keep these patients in bed too long. It seems strange that we as physicians and surgeons get into these ruts; we follow established rules that the older professors told us about and we stick to them. The development of thrombosis is so common in these herniotomy cases where we keep patients in bed too long. It is very important to get them up as early as possible, and I was glad to hear the essayist say he gets his patients out in from eight to fourteen days. In large hernias which have been extra-abdominal for a long time, where there has been undue tension on the structures, and where the hernia has been removed from its natural habitat, or rather the intestinal coil has been removed from its natural habitat, I get good results from putting these patients to bed for a few days previous to the time of the operation, get the bowel back, and let it become accustomed to the natural place in the abdomen,

and after operation there is less tendency to pressure on the field of the operation.

I want to congratulate Dr. Masson on presenting this splendid paper to the Surgical Section.

DR. THOMAS E. WILLIAMS, Eau Claire, Wisconsin: We are naturally very grateful to Dr. Masson for his splendid review of this subject. He laid very little stress on the sutures used. Recently in Chicago, Dr. Willard Bartlett, of St. Louis, presented a paper on recurrent hernias and laid especial stress upon two things. Dr. Schmitt has mentioned one of them in particular, and that is the relief of tension on the sutures. Dr. Bartlett elaborated on this very thoroughly, and that is the preparation of the patient before hand.

I would like to ask Dr. Masson in his summary to give us a brief outline of the preparation of these patients with recurrent hernias, especially those advanced in years. He seems to think that is one of the most important things before operation; namely, to make easy approximation of the parts to be sutured, and then the careful application of the sutures not to get them too tense. Personally, I have been an advocate of silk ligatures, I have always used them. I got that method from Dr. Schwyzer of St. Paul, whom I greatly admire, and who reported to this association a year ago three hundred and seventy-six consecutive cases of hernia of the inguinal region without a recurrence so far as he could find out. Personally, I carried out in conjunction with Dr. Schwyzer a number of years ago some research work upon animals with the use of silk, and we proved conclusively to our satisfaction that fine silk, using it double, is absorbed as readily as chromic catgut, and the preparation of it is one of the most important features, that is double boiling the silk in one to five hundred bichloride of mercury.

I am sure it is a great pleasure to hear the statistics Dr. Masson has given us which are certainly encouraging.

DR. A. W. IDE, Brainerd: I would like to ask the essayist, if I may, if he pays any particular attention to the question of swelling in the repair of the external ring? It has seemed to me there is quite a tendency to have that pretty snug. Care should be taken to prevent constriction of the cord.

I was much interested in the statement that these patients are kept from doing heavy work from two to six months. I believe there is a great tendency to get these patients to work too early. I believe the idea of keeping them away from heavy work the first three to six months, depending upon the hernia and the nature of the work, is a very important factor.

DR. MASSON, (closing): I do not know that I have anything in particular to say other than to answer some of the points that were brought out in the discussion. I shall first speak of the suture material. Before going to the Mayo Clinic I had always used kangaroo tendon, and I believed the results depended a good deal on having suture material that would last twenty days or even longer. I am sure that in my earlier operations, when I used interrupted sutures, I tied them too tightly; not only drawing the internal oblique down to Poupart's ligament but frequently tying it so tight, that the suture cut into the muscle, which added a source of danger rather than protection.

As far as nonabsorable sutures are concerned, I have never used them to any great extent. I used silk and linen in my earlier work in difficult cases, and when good results followed I gave the suture material credit, but after an experience of five years in operating on a great many hernias that were more difficult to deal with surgically than those usually encountered in private practice, including a great many recurrent hernias, I do not use sutures stronger than No. 2 chromic gut. For children I use No. 1. If the wound is closed without undue tension and the sutures are not tied too tightly, they will not cut through or break, and if there is no infection, nature will look out for the rest. The tissues will have a chance to heal in the position you put them.

As regards the transverse incision, I might say that one advantage in a double hernia is that we have one transverse rather than two oblique incisions in which the circulation is cut off in the lower part of the central flap. As a result serum collects in the lower end of the wound and as it is hard to keep th lower angles of the wounds covered with dressing, infection is prone to follow. With the incision made higher the dressing can be kept in place and the danger of infection avoided. The only disadvantage of the transverse incision is in stout persons in whom it is hard to get exposure.

Previous to my surgical work in Rochester, I kept patients in bed from two to three weeks to give the tissues a chance to heal. I received a shock in this regard the first day I was in the clinic. Young adults, with indirect inguinal hernias, are made to get out of bed on the eighth day. Older people with bad hernias are kept in bed longer, and when allowed to get up on the tenth or fourteenth day they are allowed to move around a little but not to do any work. I am satisfied from my own experience as a patient that sitting up or walking slowly and carefully does not subject the wound to as much strain as that of moving in bed or in using the bedpan.

As to the preparation of the patient before operation, that is an important feature. I used to keep fleshy patients in bed for a long time trying to reduce their weight by rest and purgatives. In the bad cases of large hernias it is very important that patients shall be kept in bed, on a light diet, with

free movement of the bowels. With this treatment they become much better operative risks.

A most important factor in connection with any operation is the bringing together of the tissues without tension. There is no use pulling the internal oblique down to Poupart's ligament if it cannot be done without tension. The tissues will not heal and the sutures will cut through in from twenty-four to forty-eight hours. When apposition without tension is obtained healing will take place readily and will not interfere with the circulation.

In the closure of the lower part of the inguinal canal Bloodgood utilizes the rectus muscle in all cases in which the internal oblique is not sufficiently strong. The sheath of the rectus posterior attachment of the internal oblique is cut by a slit two and one-half to three inches in length which frees the fibres of the rectus, making the closure of the lower half of the inguinal canal very satisfactory. The internal oblique can usually (even in the worst cases' be utilized in closing the upper half of the canal.

DR. ARTHUR N. COLLINS, Duluth: I want to subscribe to the transverse incision. I have used it quite a little in the last year or two, in double hernia cases and I find it very useful. This incision is easily closed, and one can repair both canals at the same time. There is less time consumed in the operation.

I was much interested in the length of time of keeping these patients in bed after operations for hernia, namely, from six to eight or ten days. During a recent visit to the Navy Hospital at the Great Lakes Training Station, I was informed by one of the Navy surgeons that a regulation of the Surgeon-Generals' Department required men operated on for hernia to remain in bed three weeks.

THE SURGICAL TREATMENT OF TRAUMATIC EPILEPSY*

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The successful treatment of traumatic epilepsy depends upon the eradication of the causative factors and the prevention of their recurrence. Prophylaxis is an equally or even more important consideration. The surgery of this condition when judged by these precepts will frequently be found lacking in one or all of these requirements. Extenuating circumstances, such as infection in a compound fracture may make inadvisable the performance of a complete one-stage operation. The surgeon's obligation for the complete operation is not, however, thereby lessened.

Pathology: A depressed fracture of the skull, exuberant callous formation following the removal of the depressed fragments, spicules of bone penetrating the brain cortex, foreign bodies, as bullets and fragments of metal, adhesions between the brain and the dura, cortical cicatrices and traumatic cysts, may individually or collectively in groups be responsible for the development of epilepsy. Concussion of the brain may be followed by epilepsy. It is usually general in character and not a favorable type for surgery.

Prophylaxis: This is probably our most important consideration, and begins with the recognition or diagnosis of a fracture and cerebral hypertension. Shaving the scalp greatly facilitates the palpation, percussion and examination of the skull, and should be a routine procedure in suspected fracture cases. X-ray pictures should be taken at different angles and include a stereoptican study. If the outer table is fractured, the inner plate is usually more extensively damaged. Fracture of the inner table with depression of the fragments may occur without fracture of the outer table. An incomplete X-ray examination may be worse than useless when negative, in giving a false sense of security. Unless the plates are good and the examination complete, the case should not be considered as having been X-rayed.

Every depressed fracture should be at least elevated or have the fragments removed. This, however, is usually not enough. Our real interest in a fracture of the skull is the presence and extent of damage to the brain and its membranes. The construction of an osteoplastic flap with the depressed area at its center has the advantage of permitting of a careful examination of the dura and the brain and attention to its injury when required. Hemorrhage is controlled and extradural clots removed. On examination of the dura, if pulsation be absent, and it appears dark or cloudy, incise for subdural hemorrhage or clot. An incision one-sixteenth of an inch in length is sufficient for diagnosis. Subdural blood clots slowly become organized and form adhesions between the brain and the dura. Large clots between the layers of the brain coverings

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may absorb and form meningeal cysts. Such adhesions and cysts may be the irritative factor producing epilepsy. Dural lacerations should be carefully approximated by fine sutures, or, after removing the ragged edges, should be covered with some membrane in an effort to prevent adhesions forming to the cortex. The wound must be absolutely dry at closure. The writer has employed autoplastic facia lata transplants with a thin layer of fat, the fat side placed down, with entire satisfaction in two such cases. Before closing the wound, the depressed area in the osteoplastic flap may be forced back from the inner surface and the flap returned, or the entire bone flap be removed. A defect in the skull bears no ill consequences.

If the depressed fragments be removed, without the formation of a flap as described, it is most important to bite the bone margin away all around the fractured area, leaving a smooth, clean and even circumference. Rough lacerated bony margins commonly develop excessive exuberant callus which exerts pressure on the underlying brain, and so may cause reflex epilepsy. The endosteal layer of the dura and periosteum are limiting membranes, and when lacerated and ripped up from their attachment do not confine the bone, thus permitting the formation of marginal hyperostoses, hence the necessity for leaving a smooth, even margin to the fracture defect.

As an exception to the above, depressed fractures over the longitudinal or lateral sinuses should not be disturbed; a decompression elsewhere, preferably a subtemporal Cushing decompression, being performed to relieve and offset the increased intracranial pressure.

All skull injuries complicated by cerebral hypertension, as shown by the ophthalmoscope and mercurial manometer, should have a single or bilateral subtemporal decompression performed, not alone to prevent death from medullary compression, but to avoid the secondary compression effects, viz., headaches, dizziness, mental derangements, changes in character, general epilepsy, etc.

Surgical Treatment of Traumatic Epilepsy: Cases of traumatic epilepsy should be operated upon as early as possible after the incidence of the convulsive attacks, that is, before "epileptogenic changes" occur in the brain. The likelihood of betterment diminishes in inverse ratio to the duration of the epilepsy. However, in well established cases, even though the attacks be not entirely stopped, they are apt to be lessened in severity and the interval between their occurrence prolonged provided the operation results in the removal of a definite macroscopic lesion. In order to obtain a result from a gastroenterostomy a definite macroscopic lesion must be demonstrated. The condition in epilepsy is parallel, and in the absence of such a definite lesion further surgery is meddlesome.

In the presence of a depression or defect, a horseshoe shaped flap of scalp is formed at the site of the lesion and turned down with its base attached to the arterial supply. In the case of a defect, extreme caution must be exercised in elevating this flap by sharp dissection from the frequency present dense scar attachment to the underlying brain cortex. The margin of the defect after detaching the adherent dura is carefully examined for exuberant callus, and the same when present removed. One of the writer's cases had marginal callus pressing upon the underlying brain for a depth of one-half inch below the level of the inner plate of the skull. Scarred and adherent dura, when extensive, had better be removed entirely. Small adhesions may be carefully separated without sacrificing the dura. Cysts should be evacuated and the sac removed, or at least partly removed. A cortical scar when present should be excised clean and smooth, down to the white matter if necessary. A cataract knife has been found very satisfactory for this purpose. Foreign bodies, as a bullet or piece of metal, should be carefully removed and when necessary through a clean cut incision into the brain cortex rather than through laceration of the same. Edema of the pia is frequently present and may be relieved by numerous small needle pricks.

Cases of persistent headache, dizziness, changed character and mental derangement following trauma have been improved and cured by the operation of decompression.

The Prevention of Recurrence: The removal of the cause in traumatic epilepsy without the prevention of the recurrence of such cause is usually wasted effort. Exuberant marginal callus widely removed, leaving a clean-cut,

smooth border, does not recur. Cysts from which half of the sac, and preferably the entire sac, is removed are permanently destroyed. A cortical cicatrix removed smooth, dry, and aseptic, heals with slight and minor scar formation. The scars from aseptic operations on the brain do not cause epilepsy. The surgical problem now becomes the prevention of adhesions of the brain to the meninges, scalp or skull, and the supplying of the defect in the removed dura. Cargile and Hanel's membranes, celluloid, gold foil, and rubber tissue have been employed for this purpose with varying degrees of success. Perthes reports the use of fresh hernial sac in seven cases with success in six, and death in one due to infection. Lexer and Binnie both report the implanting of free flaps of fat in cases of traumatic epilepsy with very satisfactory results. Kirschner, in 1912, reported seventeen cases in which fat free fascia lata was employed, stating that in the cases where implantation was made to replace dura pathology, there were no more convulsions.

The writer has employed autoplastic transplants of fascia lata with a thin layer of fat in eleven brain cases, nine epilepsy, and two as prophylactic measures. The graft is obtained from the patient's thigh right at the time of the brain operation and placed in situ fat side down. It is obtained and handled entirely with instruments, is not touched with the gloved hand, and is sutured snug and taut into the defect. In all cases the transplanted fascia healed without reaction. One case was not at all improved. Convulsions recurred in the hospital as before the operation. The patient was not made any worse by the operation. The other cases have all been greatly improved. Insufficient time has elapsed to permit of final conclusions in the series of cases. One case has remained entirely cured for over four years. Some of the improved cases have been able to resume their occupations as a result of the decrease in the frequency and severity of their attacks. One case previously incapacitated is able to perform manual labor due to the additional great improvement in a spastic paralysis of an upper and lower extremity.

In conclusion: Every skull injury should be viewed as to its epileptic potentiality. It is evident from the character of the pathology causing traumatic epilepsy that the condition is frequently preventable by the appropriate treatment of the primary injury. The surgeon's responsibility in a skull trauma does not cease until complete preventative efforts have been instituted, even though several operations are required. When the attacks are established many of the cases can be improved and some cured. The mental deterioration in epilepties is so rapid and their plight so pitiable that even improvement is an unmeasurable blessing.

DISCUSSION

DR. W. A. COVENTRY, Duluth: A few years ago I had occasion to see a man who was the driver of a brewery wagon, and, during an attack of epilepsy fell off of the wagon. On examining him carefully I found that his hair was fortunately very short and I discovered a small scar in the upper part of the occipital bone. I learned that when a small child he fell off of a chair and his head hit the end of the iron on the fireplace which laid him up for some time. As a result of this injury he had a triangular scar. I put the proposition up to him of doing a decompression operation. He consented to have the operation done. I did a decompression, removed a good sized button of bone, and found an exostosis on the inner table of the plate of the skull which was removed. It is now ten years since the operation was done; the man has not had a convuslion since, whereas, before that time for a period of at least four years before I saw him he was having convulsions on an average of twice a week.

DR. A. W. ADSON, Rochester, Minn.: I have certainly enjoyed Doctor Strachauer's paper, as since it has been my privilege to operate upon a goodly number of patients with epilepsy I can fully appreciate the difficulties that are encountered.

Doctor Strachauer has emphasized two very important points; one, the early surgical treatment of skull injuries, and the second, the radical treatment of such injuries at the time of operation. We all appreciate that the treatment of epilepsy is one of more or less uncertainty and that we can accomplish more in preventing epilepsy by the early treatment than we can in operating upon bony defects, various forms of adhesive meningitis, old hemorrhages, or cysts of the brain.

With reference to the operative treatment following injury, it is important that the wounds be thoroughly exposed, that bone fragments and foreign bodies be removed, and that proper drainage be used. One must also bear in mind the possibilities of brain abscesses, which, if treated in time, give an uneventful recovery. Following the immediate treatment, it is frequently advisable to consider doing the various plastic operations and the closing of the bony defects before epilepsy sets in, but I agree with Doctor Strachauer that in patients with a definite

Jacksonian epilepsy or in patients with grand mal epilepsy with localizing signs, one is justified in making a large exploration and performing a radical operation, such as the removal of the cysts or even the removal of destroyed cortex and the use of foreign membranes, and particularly the fascia lata for coverings.

DR. ARCHIBALD MACLAREN, St. Paul: I have had the privilege of watching and seeing several of these cases that Dr. Strachauer mentioned, and we feel at the University Hospital that the suggestion of using fascia lata with the attached fat to cover these defects is a useful one, and in most instances accomplished a very excellent purpose.

DR. STRACHAUER (closing): I wish to thank the gentlemen for the discussion of my paper.

There are several points which may bear emphasis. This proposition of shaving the entire scalp is most important. Head injuries commonly receive a one-half inch shave on either side of the scalp wound. Shaving the entire scalp permits of a thorough examination, and if the practice were more generally employed it would greatly reduce the number of major lesions which are being overlooked.

Cerebral hypertension, that is increased intracranial pressure, may be present in the absence of a skull fracture. A blood vessel may be lacerated from the traumatism and a hematoma form. The hematoma may be absorbed without the formation of adhesions, or following organization and adhesion may develop between the cortex and the dura. Such an adhesion may be responsible for the development of epilepsy. Meningeal cysts secondary to the hemorrhage may likewise be responsible for the epilepsy. If the intracranial hemorrhage be not recognized, the hypertension may become excessive to the degree that the patient may die of medullary compression. Medullary compression manifests itself in the lower grades by slowing of the pulse and in the excessive degrees by the very rapid pulse. By the use of the ophthalmoscope the early edema of the increased pressure may be seen and the condition definitely diagnosticated. Highly developed brain tissue will not stand the great insult of increased intracranial pressure. A subtemporal decompression is indicated and emergent to permit the brain to bulge and be relieved. If unrecognized; these are the cases which develop epilepsy and changed personality.

THE ETIOLOGY, PATHOLOGY AND PATHOGENESIS OF PAPILLEDEMA*

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It was Türk, in 1853, who first called attention to the ophthalmoscopic changes in brain tumor; however, to V. Graefe (1860) must be given the credit as the first to describe choked disc and to establish its relationship with intracranial pressure.

It is not the purpose of this paper to deal at length with papillary ectasis in its entirety, but rather to outline a compendium on the etiology, pathology and pathogenesis of the condition, facts and theories reported in current literature. That various terms are frequently applied interchangeably to name acute pathological changes in the optic nerve head—papillitis, papilledema, papillary ectasis, choked disc, neuritis intraocularis, optic neuritis, etc.—has given rise to no little confusion in terminology and vagueness of expression. The author will, therefore, attempt to clarify the subject in his endeavor to define papilledema. The terms papillitis and neuritis intra-ocularis are synonymous and may be applied to any inflammatory process involving the optic nerve head regardless of the degree, mode of production or causation. In the opinion of the writer, the expression "neuritis optica intra-ocularis" might well be substituted for the less qualifying term "neuritis intraocular" now in common usage.

For the purpose of classification and description, inflammatory conditions of the optic papilla grouped under the general title "papillitis or neuritis optica intra-ocularis" may be subdivided into three clinical entities, (A) Neuroretinitis, (B) descending optic neuritis, (C) choked disc.

(A) As the optic nerve is in anatomical and physiological continuity with the retina inflammatory processes attacking one may and not infrequently does involve the other. As a consequence, a descending optic neuritis or choked disc, strictly speaking, may in some instances come under the heading of neuro-retinitis. However, common usage has decreed that this term

*Read before the Minnesota Academy of Opthalmology, as a contribution to a Symposium on Choked Disc.

be restricted to conditions arising from grave systemic disorders such as diabetes, Bright's disease, syphilis, artero-sclerosis, leukemia, sepsis, etc.

(B) and (C) The terms descending optic neuritis and choked disc include only such inflammatory changes in the optic nerve-head that arise as a consequence of intracranial disease. Descending optic neuritis, as the name implies, denotes an inflammation of the optic nerve that has advanced from the brain peripherally. In contradistinction, choked disc begins at or in the neighborhood of the papilla and tends to extend towards the brain.

What are the distinctive features from an ophthalmoscopic standpoint that characterize neuro-retinitis, descending optic neuritis and choked disc? Without entering into a description of the various forms of neuro-retinitis in prototype it may be said that certain distinctive findings are common to the group. There is redness and cloudiness of the papilla with obscurations of its margins due to peripapillary edema although there is usually very little elevation of the disc. A broadening and tortuosity of the veins and a moderate contracture of the arteries is a constant finding; white spots and hemorrhages are the rule. The white areas may take the form of streaks lying along the course of vessels or may appear as circumscribed areas of exudation, whitish or yellowish plaques, discrete or confluent. Hemorrhages when situated in the superficial layers of the retina are feathery or flame-like; in the deeper layers they frequently appear roundish. The edematous disc and its radially streaked margins are not infrequently spotted with hemorrhagic areas together with whitish plaques which in places hide the retinal vessels.

In descending optic neuritis the papilla may present an appearance quite similar to that described above with this distinction; there is little or no retinal involvement.

The term "choked disc" implies enormous swelling of the disc which may reach as high as 8 or 10 diopters. The papillary edema is usually quite definitely delimited to the disc margins, the surrounding retina showing little if any change. At times the papilla is found mottled with hemorrhages and its vessels ensheathed with white exudate. The veins are extremely tortuous and dilated with arteries markedly contracted.

Unfortunately an ophthalmoscopic picture of neuro-retinitis, descending optic neuritis or choked disc does not always confine itself to type—a point of decided clinical importance. The fundus finding in intracranial disease (descending optic neuritis, or choked disc) may assume an appearance exactly like a neuro-retinitis of kidney disease including the starshaped figure at the macula. Per contra, a neuro-retinitis due to renal disease, diabetes, syphilis, etc., may present a papilla with marked elevation and very little if any retinal involvement. Therefore, it is a part of wisdom that the ophthalmologist arm himself against error when inspecting a neuro-retinal inflammatory condition by applying the general term "neuritis optica intra-ocularis" until the true etiology of the malady be established through a carefnl consideration of all clinical findings. By this means we may readily assist the surgeon who declares "We must rely upon the oculist for an early diagnosis of choked disc."

The expression "papilledema" is rather abstract in its meaning, and as the name would signify, calls to mind edema of the disc as the most conspicuous ophthalmoscopic finding from whatever cause. As papillary edema arises most commonly as a consequence of intracranial disease, the expression "papilledema" is frequently used interchangeably with "descending optic neuritis" or "choked disc," particularly the latter, if the degree of papillary elevation be not in the extreme.

Brain Tumors

Gowers hold that choked disc obtains in 80% of all cases of brain tumor; Annuske and Reich observed this phenomena in 95% of cases collected from the literature recording 88 instances; Oppenheim found 90% in 100 cases. Concerning the relative frequency of choked disc in tumors effecting various parts of the brain, Edwards and Lawford found papilledema in 20 ont of 23 instances of cerebellar tumor, in 74% of tumors affecting the base and in 50% of tumors affecting the convexity, facts compiled from a series of 107 cases. A point of clinical interest was first brought out by Grosz; the relative infrequency of choked disc in tumors affecting the

convexity of the brain is doubtless due to the protection afforded the basal parts by the dense tentorium cerebelli.

Papilledema is usually an early sign in tumors of the cerebellum and base, while in cerebral tumors particularly those of the frontal lobes, it is late in its occurrence. Unilateral choked disc is extremely rare and when present is generally the result of a tumor situated near or extending to the chisma or optic nerve of one side. By the pressure of the tumor on the optic nerve the vaginal space becomes compressed, with the result that the cerebrospinal fluid exerts pressure by way of the opposite vaginal space only, with a resulting monocular papilledema.

Kampherstein collected 72 cases of brain tumor accompanied by choked disc which are proportioned as follows: cerebellum 23; frontal lobes, 12; temporal lobes, 6; central convulsions, 4; occipital lobes, 5; epiphysis, 2; third ventricle, 2; corpus callosum, 3; optic thalamus, 2; colleculi, 7; hypophysis, 3; fourth ventricle, 1; cerebellar peduncles, 2.

Tuberculosis

In 200 cases of choked disc Kampherstein found tuberculosis 9 times, 8 cases of solitary tubercle and 1 of chronic tuberculous meningitis. The commonest site for a solitary tubercle is the cerebellum or pons. Uhthoff studied ophthalmoscopically a large series of cases affected with tuberculous meningitis. He found a moderate degree of optic neuritis in 25% of cases, 5% of which were unilateral, typical papilledema occurring in 5% of cases all of which contained a solitary tubercle in the brain accompanying the meningitis.

Syphilis

In the 200 cases of choked disc reported by Kampherstein, he found syphilis the etiological factor in 23% of cases, 8 cases of gummatous meningitis and 15 cases of various other luetic affections; Schott in 50 cases found syphilis the cause in 17%; Uhthoff in 100 cases, 14%, 8 cases of basal gummatous meningitis and 4 cases of gummatous tumors. In 150 autopsies reported in the literature choked disc was produced by cerebral lues in 10% of cases. Nonne, Hutchinson, Oppenheim and Uhthoff are unanimous in their opinion that papilledema produced by a syphilitic infection offers an unusually favorable prognosis both functional and ophthalmoscopic. In gummatous meningitis of the base, choked disc is commonest, rarely occurring when the convexity is affected (Gowers, Nonne).

Brain Abscess

According to Deutschmann the comparative rarity of choked disc in brain abscess is due to the thick capsule which prevents the distribution of the pathogenic material. Kampherstein from a series of 155 cases of brain abscess was forced to the conclusion that papilledema occurs in from 25-30% of cases. In his series of 200 cases of choked disc from various causes found brain abscess the causative agent in 3½% of the number. Recurrent papilledema following operation has been reported by several authors, a condition explained by the proliferation of granulation tissues.

Otogenous Purulent Meningitis

It has been found that in uncomplicated purulent meningitis as a result of ear infection, optic neuritis is rare, a typical choked disc being usually the result of such complications as cerebral or cerebellar abscess, subdural abscess, sinus thrombosis, etc.

Hydrocephalus

The infrequency of choked disc in hydrocephalus of children is undoubtedly due to the expansion of the skull under increased intracranial pressure. Uhthoff collected 46 cases exhibiting this neurological finding most of the patients being over 14 years of age. In all probability most of these cases in adults were secondary in origin and due to a serous meningitis.

Thrombosis

Uhthoff states that thrombosis of the cerebral sinuses causes choked disc is 18% of cases although pathological changes are to be found in the fundus in 54%. In only 25% of cases can the condition be considered uncomplicated, 33% having meningitis, 20% subdural abscess, 15% cerebral abscess, 7% cerebral abscess and arachnitis. Papillitis often commences on the side of the lesion and continues more pro-

nounced on that side, a point of diagnostic importance. Exophthalmus in case of thrombosis of cerebral sinuses of otitic origin nearly always implies an involvement of the cavernous sinus and orbital veins and is much less common than in thrombosis of the cerebral sinuses from other causes.

Intracranial Hemorrhage

Hemorrhages within the cranium may produce choked disc and this complication unquestionably occurs more frequently than one would suppose judging from the number of cases reported in the literature. This may be accounted for by the fact that an ophthalmoscopic examination is seldom made. Bleeding may arise from two sources, 1st—injury; 2nd—the result of diseased blood vessels e. g. hemorrhagic pachymeningitis, purpura, etc. In 7 cases of fractured skull blood was found in the subdural space and vaginal space of the optic nerve.

Aneurysm of the Cerebral Arteries

Papilledema is rare in cases of cerebral aneurysm and only post-mortem examination can establish the diagnosis. Such vascular enlargements are usually found at the base—carotids, vertebral artery, basilar artery, circle of Willis, etc.

Cranial Deformities

The tower skull is often associated with internal hydrocephalus with a resulting choked disc. Exostoses may also be a factor in its production.

Cysticercus

In Kampherstein's series of 200 cases of choked disc, from various causes, cerebral cysticercus was the etilogical factor in two cases.

Other conditions such as multiple sclerosis, dementia paralytica, neuritis of pregnancy and the puerperium and such drugs as arsenic, lead, mercury and methyl alcohol may, in rare instances, produce papilledema disc.

In chlorosis, pernicious anaemia, leukaemia, scurvy, purpura hemorrhagica and hemophilia pathological fundi may result although a typical papilledema in an extreme rarity.

Affections producing unilateral choked disc such as diseases of the orbit and accessory sinuses need not be dealt with here.

The Pathology of Choked Disc

The primary cause of papilledema has given rise to much speculation. Whether this pathological entity be the result of primary edema or an inflammatory process has yet to be solved. The microscopical appearances of the optic nerve head as the result of experimentally produced intracranial pressure may throw some light upon the question although it must be said in truth that such a result is hardly analogous to the condition found clinically. Difficulty has been experienced in obtaining pathological material during the earliest stage of choked disc. Where pathological sections have been examined, observers are far from unanimous in their reported findings; yet certain histological entity stand out conspicuously and are in a sense characteristic.

Kampherstein examined 51 eyes collected by Uhthoff 65% of which showed distention of the vaginal space. Elschnig in 26 cases found about the same proportion, thus establishing a fact well worthy of note. The earliest cases showed the least distention, the subarachnoid space being most affected, the arachnoid having been pressed against the dura and later fused with it. As a rule the dilatation was most marked near the globe although in some cases the site of entry of the central vessels was the place of election. In 38 of the 51 cases there were inflammatory signs in the sheath spaces. The inflammatory changes in papilledema vary enormously in degree and appear to bear no constant relationship to changes in its sheaths.

In the nerve the nuclei of the individual nerve bundles are increased by reactive proliferation of the glia cells always densest behind the lamina cribrosa. According to Kampherstein, the chief feature is edema being more or less evident in 60% of cases. He found intrafascicular edema the most characteristic finding, interfascicular edema appearing less commonly and always accompanied by the former.

The bowing back of the lamina cribrosa is a almost constant finding—Elschnig 41 out of

44 cases; Kampherstein 33 out of 42 cases. However, in the atrophic stage, the lamina cribrosa returns to its normal position. According to many, whether a pathological ophthalmoscopic picture be one of choked disc or optic neuritis rests in the determination of the position of the lamina cribrosa microscopically. In 15 out of 42 cases reported in the literature there was no sign of inflammation to be seen under magnification, the condition being one of primary edema only.

That new formed connective tissue makes its appearance in the physiological cup is shown by the presence of fibroblasts which stretch forward forming a membrane over the surface of the elevation. Edema extends for a considerable distance into the surrounding retina occupying mainly the nerve fiber layer although frequently extending into the inner and internuclear layers. Occasionally the retina at the edge of the disc becomes detached.

In papilledema the consequental atrophy that frequently follows is a neuritic degeneration consisting of septal thickenings, with a slow disappearance of nerve fibers and neuroglial proliferation.

Pathogenesis

Although much has been written concerning the pathogenesis of papilledema and no small amount of experimental work performed, no theory yet advanced has met with universal approval. Graefe believed that papilledema arose as a consequence of a tumor which either directly or indirectly exerted pressure upon the cavernous sinus thereby producing a congestion of the ophthalmic vein and artery. This view was practically abandoned when Seseman called attention to the fact that there are communications between the veins of the face and the ophthalmic veins.

A theory resting upon Schwalbe's demonstration that the subarachnoid space is continuous with the vaginal space of the optic nerve, was advanced by Schmidt-Rimpler. He holds that owing to the increased intracranial pressure the flow of cerebrospinal fluid is impeded; as a result it is forced into the lamina cribrosa. There are those who question this hypothesis believing that either the central retinal vessels are compressed by the distention of the sheath or that a kinking of the central veins takes place following hydrops of the optic nerve sheath.

That anatomical observations fail to give unanimous support to these mechanical theories prompted Leber to search for another cause. He brought forth the inflammatory theory. It was his contention that certain cytotoxic substances are liberated which pass into the cerebrospinal fluid and eventually are disseminated to the optic nerve sheath, nerve and papilla producing edema and inflammation. On anatomical grounds his theory is supported by such men as Edmunds and Lawford, Zellweger and Haab, Elschnig, etc. Rochon-Duvigneaud considers the condition one of long continued action of stagnant lymph. Kruchmann believes that leucocytic infiltration is the result of the action of positive chemotactic substances producing necrosis and disintegration of tissue and that these substances are elaborated by the destruction of tumor cells.

Perhaps the most valuable experimental evidence yet obtained has resulted as a consequence of Schieck's experiments. He found that in the initial stage of papilledema the central vein is unquestionably compressed within the nerve, while outside the nerve the vein is free from engorgement. The vein is neither compressed as it passes through the dura nor is it influenced by external pressure while traversing the intervaginal space. As a result of his experiments he has built up a highly theoretical hypophesis. He holds that at the place of exit of the central vessels from the optic nerve, two currents of lymph are encountered in the intervaginal space, one flowing centrally from the vitreous chamber by way of the hilus of the papilla through the perivascular lymph spaces of the central vessels, the other flowing away from the brain, by way of the subarachnoid space. He claims that these two currents in the intervaginal space are under perfectly even pressure; should the intracranial pressure increase as a result of internal hydrocephalus, etc., the outflow from the vitreous would be impeded with a consequental increased pressure within the perivascular lymph spaces producing a picture of venous stasis. Inflammatory symptoms fol-

low upon the trail of primary edema and are the result, in part at least, to the production of decomposition products in stagnant lymph and deleterious substance elaborated from the destruction of tissue.

In conclusion it must be reiterated that in the face of conflicting findings and theoretical suppositions, the true factors that give rise to papilledema remains as yet unsettled. Yet in lieu of the small number of cases that have been examined histologically in its earliest stage presenting almost universally distention of the perineural lymph sheaths of the optic nerve, a bowing forward of the lamina cribrosa and a primary edematous involvement of the disc without inflammatory reaction, the author is strongly of the opinion that the mechanical theory must stand. That inflammatory changes do appear pathologically in the later stages in a large proportion of cases owes its explanation to the toxic effect produced by cytotoxic substances elaborated from the degenerating tumor mass, the products of stagnant lymph or somatogenic material formed in necrosing nerve or nerve sheaths.

One point in favor of the mechanical theory stands out preeminently. Clinical evidence obtained through the results of cerebral surgery has established the fact that dural incision relieves intracranial pressure. That this surgical procedure acts favorably upon the edematous disc is incontestable; without it many cases would result in blindness.

TREATMENT STUDY OF OTOSCLEROSIS*

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The Etiology of Otosclerosis is still an open question. The morbid changes associated with Otoscelerosis in the past was fixation of the stapes, but we now know that this may be due to fibrous bands caused by inflammation. While the bony changes around the stapedio-articulation causing ankylosis is present in Otosclerosis, there may be changes in other parts of the bony capsule that would interfere with tone. We can have interference with tone reception and still have the stapedio-articulation practically normal.

With the destruction or limit of tone by these bone changes, we may account for the loss of hearing in certain range of tones. The time of hearing may be increased for the lower tone and shortened for the higher tones, so any particular change in tone length would not necessarily be symptomatic. This bony change may be in the stapedio-articulation, in the labyrinth, cochlea or any part of the petrous bone as well as other bones in the body, as cited in Osteomalacia and Acromegalia.

The hypothesis of Gray, "That Otosclerosis was due to a failure of local blood supply, due to some depressed systemic condition," might be assumed as caused by some disturbance of internal secretion.

A classical Otosclerosis would have the following symptoms: Gradual deafness; tinnitus present; paracusis present; absence of chronic tympanic disease; patent eustachian tubes; lower tones raised, higher tones nearly normal; Rinne' Gelle negative. One could hardly miss a diagnosis with these signs present which signifies an Otosclerosis with fixation of the stapes. If the bone changes have affected other parts of the labryinthine capsule, the diagnosis becomes more difficult. The flushed spot on the drum over the promontory, might be caused by middle ear congestion and a thin membrane, so it could hardly be a classical sign.

Some have lost view of the fact of seeming heredity; that it progresses rapidly, then will seemingly be dormant for a number of years, or become a little better; that it can be complicated by other ear disease, which when removed leave us with the fundamental Otosclerotic condition; that these patients are nearly always past middle life and have the appearance of being poorly nourished, or in poor physical condition, and yet claim that they are feeling as well as usual.

In the pathology of this condition, we know that there are certain changes in the bone surrounding and including the internal ear. First a softening and absorption, then a return to a new bone condition, followed by a Sclerosis. This condition existing in any or all parts of the bony labyrinth, as well as the other bones in the

*Entrance Thesis to Minnesota Academy.

same individual, points to the fact that there is some disturbance in the control governing nutrition of tissue. We know that strong and weak glands and organs are transmitted, for we know they run in families. We have to look for a disturbance in the secretion of the substance that controls these conditions, and it seems better answered by the internal secretions.

At the meeting of the Ninth International Otological Congress at Boston in Aug. 1912, I had the pleasure of hearing a paper by Dr. Richard Lake of London on, "A Case of Early Otosclerosis Treated by Radium." The significant points in the report, was not the treating by Radium, but that the patient at times was in an extreme nervous condition, that at three different periods during the three years of observation, she had a rapid loss of weight, which shows from recent studies, that there was at these times some imbalance in the internal secretions, undoubtedly a hyper-secretion, which may have accounted for the slight improvement in the condition. One other point in the case was the absence of some of the classic symptoms. This fact should be remembered, that we rarely find a classic Otosclerosis, but as a rule in combination with other ear diseases.

The standing still of the cases for months and years, might indicate the equalization of the internal secretions, or the hyper or hypo-secretions of some substance that would act favorably on the Otosclerotic condition.

In the discussion of this paper, Dr. Neumann of Vienna, said that the etiology of Otosclerosis was unknown, and that Dr. Denkers hypothysis of the participation of the Hypophysis might just as well be connected with any other gland.

These glands have inherited weakness, they hyper and hyposecrete, and the different strain of symptoms show themselves under different conditions.

In considering the internal secretion, we have to deal particularly with the thyroid, thymus, hypophysis and the adrenals. Other so considered ductless glands, will not be considered in this discussion, but possibly may be found involved in the future diseussion on Otosclerosis.

Of these glands, the hypophysis and adrenals particularly influence bone growth. While the thymus also affects bone growth, it seems to be most particularly in control during the early months of life. It is supposed to disappear at puberty.

We see our bone and tissue change in Myxedema, which returns to normal on the administration of thyroid extract. The removal of either the thymus, hypophysis, pineal or suprarenal glands is followed very quickly by death. While the hypophysis and suprarenal act in control to the thyroid, they can particularly replace each other. As we have some ductless glands that seem to control the physiological changes in the bone, is it not possible that some cause acting on these glands tends to a hyper or hypo-secretion and causes changes in the bony capsule of the ear, the same as we know it does in Osteomalacia and Acromegalia?

It has been found experimentally that with hypo-secretions of the suprarenals, we have symptoms of Osteomalacia, which changes return to normal with the injections of Adrenalin, This point is extremely interesting in the eitology and treatment of Otosclerosis.

The cause of the effect on the secretion of the glands has been suggested as some focal infection or chronic intestinal condition.

If the hypothesis that hypo-secretion of the ductless glands influencing bone matabolism, is a cause of Otosclerosis, and we are unable to find any focal infection, or other cause effecting the secretion of these glands, the line of treatment would be to supply this deficiency until condition would become favorable to an establishing of normal secretion.

In this very shallow study of 18 cases, I have simply tried to raise to a normal index the hypo-secretion of the thyroid and suprarenal glands. In my new series, I am searching out all focal infection and removing them as far as possible.

We based the diagnosis of these 18 cases as Otosclerosis, or suspicious on the following symptoms: Physical signs, progressive deafness, tinnitus, paraeusis, condition of eustachian tube, Rinne', Gelle', high tones, low tones, Goitre and goitre in the family, hearing in the family.

All of the 18 cases had normal physical signs, deafness was progressive, noise was present, and tubes open. As to paracusis, fourteen were positive, two were doubtful, and one was negative. In the Rinne' test, eleven were negative in both ears, six were positive in both ears and one was negative in the right ear and positive in the left.

In the Gelle' test, six were negative, five were positive, six were unable to tell, and one was positive in the right and negative in the left. In the hearing of high tones, fourteen heard them better and four were undecided on either high or low tones. Six of the cases had goitre. In one the father was otosclerotic, in another, the mother, and in a third the father and sister, a number were unable to tell.

Several of the cases were unable to continue with the thyroid tablets, two of these having small goitres, but no hyper-secretion symptoms until the tablets were taken. Four cases were unable to take either thyroid or suprarenal tablets.

Thirteen of the cases improved in hearing, two improved only in one ear. Two showed a retrograde of hearing in the third month but still nearly 100% improvement.

Tinnitus was better in three cases, and disappeared in three cases. The others were not improved.

Two cases were under observation only one month; eleven, two months; seven, three months; four, four months; and one, five months.

The improvement in these cases are far too good. In the short period of study of some of them, the slight improvement might be due to a reduction of congestion.

In eleven of the 18 cases that came for examination at the end of sixty days, two showed no improvement in either ear, two showed no improvement in one ear and a retrograde in the other. Two showed no improvement in one ear and improvement in the other; while five showed improvement in both ears.

At the end of ninety days, seven reported for examination. Of these, one showed a retrograde in both ears. One showed no improvement in one ear and a retrograde in the other. Three showed no improvement in one ear and improvement in the other. One showed improvement in both ears, and one showed improvement in one ear and a retrograde in the other.

At the end of one hundred and fifty days, only one reported for examination. Her improvement was from two inches in the right and three inches in the left to six inches in both ears.

Of the eleven cases that reported at the end of sixty days. The tinnitus in six was better. The tinnitus in three of these six cases had disappeared at the end of ninety days.

At the end of one hundred and twenty days of treatment, three cases maintained their improvement. At the end of one hundred and fifty days, treatment of one that reported showed a great improvement and this case had remained stationary for ninety days previously.

The question is were these cases improved by the medication or was the improvement due to the clearing up of some condition affecting the ears? If the cases were followed still further would the improvement still continue, or would they go back to their old conditions?

At the end of this time I left Aurora, Ill., where I was practicing and have no further record of these cases. As I did not expect to report these cases, my examinations were not as thorough as I am now conducting my new series of cases, and I hope to be able to follow the cases over a longer period. After establishing a dosage that gives no physical results, I expect the patient to continue and report each month for examination test.

SOME LEGAL ASPECTS OF MEDICINE AND SURGERY*

By Mr. George W. Peterson,
St. Paul, Minn.

The late Senator Davis of Minnesota, delivered a series of lectures on International Law to the student body of our University about twenty-five years ago. He prefaced what he had to say, by observing that every professional man owed a debt to his profession, and that debt he was trying to pay in part, in the preparation and publication of his lectures on a theme than specially affected with a public interest, because of the entanglements of our own country with Spain, and our growing importance as a world power. Senator Davis got the thought of owing something and leaving something to his profession from Lord Bacon, who had expressed the same sentiment.

The truth is that professionally and otherwise, "We are heirs of all the ages, in the foremost files of time" and adapting a line from one of

*Read at the meeting of the Southern Minnesota Medicine Association, Jan. 21-22, 1919 at Mankato.

the war poems, this body of elder medical men says to the younger medical men:

"To you from falling hands the torch we throw,
Be yours to hold it high."

In fine, your clear obligation is, to pass on the science and practice of medicine and surgery, richer and better than you received it. It is to that end and for that purpose that you are here.

"Something attempted, something done,
Has earned a night's repose."

And the principle that the more you do, the more is expected of you, has gotten into the obligations of the law. It was the ancient law that the physician and surgeon should have the skill of his profession in the community where he practiced, using, of course, ordinary care. In other words if the standard of professional skill was low in the community, or if the physician possessed all the skill there was, because he was the only practioner, the obligation of the law was met. But this rule was modified and extended by the recent case of Viita vs. Fleming (132 Minn. 128) a fracture case, in which the Court held that a surgeon living at Carlton, was in the community of Duluth, that medical associations frequently met in the larger centers, where the skill and learning of the profession were set out, and for the purpose of the standard of skill, it was the duty of the physician and surgeon to keep in touch with the doings of medical associations, and the published contemporaneous literature of the profession. In short the community doctrine was extended, and, to illustrate, the professional man at Jasper is cosmopolitan, and his environs includes Mankato, and Rochester.

Rochester, a name to conjure with! You know it was Emerson who said:

"If a man can write a better book, preach a better sermon, or make a better mousetrap than his neighbors, though he build his house in the woods, the world will make a beaten path to his door."

Hasn't the whole world made a beaten path to the Mayo Clinic!

Any discussion on legal medicine would be incomplete, without a reference to the leading case of Staloch vs. Holm (100 Minn. 276). In that case the brief facts were these: The deceased, an apparently strong healthy man, twenty-one years of age, working with a steam outfit, stepped on the covering over the cylinder of a separator about to stop. A board slipped. His right foot went down in front of the revolving cylinder. The crew took him off the machine. A tooth or teeth of the cylinder had torn the flesh in the back part of the calf of his leg. Although the witnesses used different and inconsistent adjectives in describing the injury, it appears from their testimony and the circumstances that considerable flesh was mangled, crushed, and shredded; that the wound was large, lacerated, ragged, and oozing; that it was "ground full of chaff, dirt, and seeds"; and that bones and tissues were "gouged out." The young man was taken to a nearby house and the doctor immediately sent for. The doctor arrived; was at once able to tell that an operation would be necessary, but did not decide on it then. It was at least an hour, he says, before he commenced to actually operate. This he did, according to his testimony, a little before one o'clock and completed it before two, remaining for some hours afterwards, and administering stimulants. Shortly after he left the patient died. The evidence of plaintiff tended to show that the patient died of shock; the evidence of the defendant, that he died from the effect of a bubble of air, or fat, or of a clot of blood, which found its way to and stopped the action of the heart.

Action was brought to recover damages, and there was a jury verdict against the operating surgeon, which was reversed on appeal and the broad and wholesome doctrine forever established in our law of civil malpractice, that a physician is not liable for errors of judgment, and that honest judgment exercised in good faith is full protection to the physician of requisite skill, and this is particularly true in cases of emergency and doubt. The case has become so established in the books, that I quote briefly from it as follows: "The principles of law applicable to such a state of facts are clear and well-settled. In an ordinary action for negligence, that a man has acted according to his best judgment is no defense. The standard of careful conduct is not the opinion of the individual, but is the conduct of an ordinarily prudent man under the circumstances. In the leading case of Vaughn vs. Menlove, 3 Bing N. C. 468, 475, Tindall, C. J., said

that to hold otherwise 'would leave so vague a line as to afford no rule at all; the degree of judgment belonging to each individual being infinitely various.' With respect to matters resting upon pure theory, judgment, and opinion, however, there is a generally recognized variation from this sound general principle. The distinction between an error of judgment and negligence is not easily determined. It would seem, however, that if one, assuming a responsibility as an expert, possesses a knowledge of the facts and circumstances connected with the duty he is about to perform, and bringing to bear all his professional experience and skill, weighs those facts and circumstances, and decides upon a course of action which he faithfully attempts to carry out; then want of success, if due to such course of action, would be due to error of judgment, and not to negligence. But if he omits to inform himself as to the facts and circumstances, or does not possess the knowledge, experience, or skill which he professes, than a failure, if caused thereby, would be negligence." And again, "A physician entitled to practice his profession, possessing the requisite qualifications, and applying his skill and judgment with due care, is not ordinarily liable for damages consequent upon an honest mistake or an error of judgment in making a diagnosis, in prescribing treatment, or in determining upon an operation, where there is reasonable doubt as to the nature of the physical conditions involved or as to what should have been done, in accordance with recognized authority and good current practice" And as follows: "Another justification for the exception lies in the nature of the undertaking. Most professional men are retained or employed in order that they may give the benefit of their peculiar and individual judgment and skill. A lawyer, for example, does not contract to win a lawsuit, but to give his best opinion and ability. He has never been held to lability in damages for a failure to determine disputed questions of law in accordance with their final decision by courts of appeal. It would be just as unreasonable to hold a physician responsible for an honest error of judgment on so uncertain problems as are presented in surgery and medicine." And again, "Physicians and surgeons deal with progressive inductive science. On two historic occasions the greatest surgeons in our country met in conference to decide whether or not they should operate upon the person of a president of the United States. Their conclusion was the final human judgment. They were not responsible in law either human or divine for the ultimate decree of nature. The same tragedy is enacted in a less conspicuous way every day in every part of the country. The same principle of justice apply."

This case too laid down the rule that damaging admissions of a physician or surgeon, based on after acquired information, are inadmissible, the point being that the professional man is to be judged, not by after acquired things, but in the light of the attendant circumstances.

I would be unmindful of my duty in referring to this case before a body of medical men, if I did not make a particular reference to the writer of the decision, the late Justice Jaggard. He was a great friend of the medical man, who was right and true. He admired ability and character in the man of medical science. He was learned in and lectured on medical Jurisprudence. He held high the ideals and learnings of the profession, and to all such, was companion, helpmate, and friend. He communed with the best in work, play, books, men, and nature. The law of civil malpractice is safer, and sounder, because Justice Jaggard lived and wrought.

Another leading case is Martin vs. Courtney (87 Minn. 197). In that case the patient had received a crushing injury to the foot in a railroad accident. There had been partial operative relief infection had set in, there was further operative relief, but the patient finally died of septicaemia. It was sought to hold the surgeon liable for civil malpractice on the testimony of a witness who pretended to describe the exuding pus, backed up by an expert opinion that the description of the pus indicated it was deleterious, and necessitated immediate operation. There was a jury verdict against the surgeon, but the Supreme Court held on review, that as against the record of the surgeon, the diagnosis of the lay witness of things which were medical, was insufficient to support the verdict. The importance of the case is that the law scrutinizes the findings of the lay witness, where those findings are impressed with things medical and scientific, and, if not wholly incompetent they must yield to the findings of the professional man. In a

recent malpractice case tried by the writer, there was spontaneous fracture of the radius in osteomyelitis. A lay witness, there being antecedent testimony of manipulation, volunteered the opinion that the bone was broken and therefore it must have been broken in the prior manipulation. The Court on the authority of the Courtney case held the lay witness, who, of course, was interested in the event of the litigation, incompetent to testify, in a case of acute osteomyelitis, that the bone was broken. The decision and principle are of course, just enough, but there is no harm in observing that, in the promulgation of the doctrine, the two professions, law and medicine, have not overlooked their own. Perhaps it is the constitutional principle of self definition!

The two professions being here mentioned together, and in connection therewith the question of malpractice, it is perhaps well enough for a lawyer to concede, apart from the merits of course, that malpractice cases will continue to be less against lawyers than physicians, as long as lawyers, the bench and bar, control the law and the courts! Be that however, as it may, it is a sound principle of government that the liability of each exists, following by analogy the words misfeasance, and malfeasance, not where there is misfeasance, mispractice, mistakes, or error of judgment only, but there must be malpractice, wrong doing, bad faith, or gross want of skill. The lawyer and physician, possessed of average skill, sell their judgment, but there is no warranty, express or implied.

It is well enough to note that the State Medical Association has successfully defended all the malpractice cases, including x-ray cases where there is prima-facie liability, brought against its members except two obstetrical cases, where the infants were greviously burned by coming in contact with an uncovered water bag, and an uncovered flat iron, which had been placed in the bed. The cases did not involve professional judgment, and the Court applied the doctrine of the sponge cases, and held the physician to the care of the patient, and of the child, even if others handled the water bag, flat iron, or other instrumentality that was damage feasant.

I have thus brought to your attention some legal aspects of medicine and surgery, particularly three, first the obligation of the law holding you to a standard, and perhaps an ever increasing standard of skill, second, the law protects you in the exercise of an honest though erroneous judgment, and third, the law protects you in your medical findings as against interference my lay witnesses.

In conclusion then, let us keep our professional ideals, and to our ownselves be true, and it must follow as the night, the day, we cannot than be false to any man. Speaking of ideals, it is well to remember that it was a physician, Dr. Oliver Wendell Holmes, who said in The Chambered Nautilus:

"Build the more stately mansions, oh my, soul,
As the swift seasons roll!
Leave thy low vaulted past!
Let each new temple,
Nobler than the last,
Shut thee from heaven,
With a dome more vast,
Till thou at length are free,
Leaving thine out grown shell,
By life's unresting sea!"

DESENSITIZATION IN SERUM THERAPY*

By Charles B. Drake,
St. Paul, Minn.

The use of serum in therapeutics has become so widespread that a consideration of the question of desensitization is of practical interest. As sensitization may be a very serious matter, it is desirable to know just what it is, where it is to be looked for and how it may be prevented.

Serum shows a wide range of primary toxicity, depending on many factors. The blood serum of one species shows a variable toxicity to other species. The serum of the eel, for instance, is very toxic to guinea pigs (4) while horse serum is practically non-toxic to the human species (2).

The horse develops a marked immunity upon repeated injection of the organisms which are the causative factors of several diseases afflicting human beings. The more common are diphtheria, epidemic meningitis, tetanus, dysentery, pneumonia and infections with the

*Read before the Ramsey County Medical Society, March 31, 1919.

streptococcus. Large quantities of serum can be obtained from the horse, so that these considerations have caused the horse to be used commercially for the source of serum. It should be distinctly understood that horse serum, in itself, is harmless even when given in large doses of 100 c. c. intravenously, and we have the statements of Von Pirquet and Rufus Cole (1) that they have never seen a fatal case of serum sickness, nor has Cole seen any unfavorable influence on the general condition of any of his pneumonia cases. The diptheria antitoxin itself contained in the serum has been proven to be perfectly harmless (2) and a similar deduction regarding the other antitoxins is justifiable. I wish to emphasize this point, because so often we encounter the statement from the laity, and also occasionally from members of the profession, that the large dose of antitoxin injured the heart.

In 1894, with the introduction of diphtheria antitoxin certain reactions following its subcutaneous injection were soon reported. The name serum sickness was applied to the condition, which was found to make its appearance at a variable time after the injection, usually eight to thirteen days. The symptoms, if they appeared, consisted of one or more of the following: urticaria, fever, malaise, pains in the joints, swelling of the lymphatics, edema, and albuminuria. The manufacturers have succeeded in reducing the frequency and severity of this reaction by using the precipitated globulin content of the serum and by starving the horses for twenty-four hours preceding the bleeding, eliminating certain products of digestion in the blood.

Rather severe serum reactions have followed the intravenous administration of pneumonia serum in large doses, a method of treatment rapidly coming into vogue during the past four years. The reactions are quite variable. The patient (3) will often become quite restless during the injection. His face may become flushed, his eyes burn and his skin begin to itch. A bronchial irritation may start him coughing. His face may rapidly become crimson, his pulse generally is full and bounding. A perspiration is likely to appear, and a urticaria may appear even during the administration. A chill, more or less severe and lasting a few minutes, or longer, is quite likely to occur about a half hour following the treatment. The chill may be followed by a condition of mild shock in which the pulse becomes weak and the skin pale and moist. Reaction follows, and with it a temperature rise of a degree or two and the pulse becomes stronger and fuller. Relaxation then sets in and the temperature descends, usually, and may even become normal and stay there.

If, following an interval of eight to thirteen days or more a second injection of the same serum is given subcutaneously, intramuscularly or intravenously a more or less severe condition of shock may occur, the more severe form of which may rapidly prove fatal and is known as anaphylaxis. As Vaughn has shown, this term is a misnomer, as the Greek ana means without and plyloxia, protection. The term allergy, meaning altered reaction, is the better term.

The degree of shock depends on several factors. The smaller the initial dose within certain limits the more likely its occurrence. Experimentally, one millionth of a c.c. of horse serum was sufficient to sensitize a guinea pig (2). The larger the amount of the second injection the greater the shock, and the reaction is more severe in ascending degree in subcutaneous intramuscular and intravenous administration. The shock may occur in a minute or two during the intravenous administration, while it may be delayed ten or twenty minutes when the subcutaneous route is used.

Anaphylactic shock is the result of a repeated injection of the same protein, not necessarily serum, when a period known as that of incubation has intervened. The reaction is very definitely a specific one. Animal experimentation has shown this hypersusceptibility to persist for years. This persistence is not so prolonged in the human, as many of us know from practical experience.

The most widely accepted theoretical explanation of anaphylaxis or hypersusceptibility, though far from being satisfactory, is something as follows: A foreign protein coming into contact with the blood and certain cells of the organism causes the formation of anti-bodies. While the foreign protein may not act as a

poison, as is the case with horse serum in the human, it does produce anti-bodies during what is known as the period of incubation necessary for sensitization. When the same protein is again introduced a certain poison called anaphylatoxin is produced, the exact source of which has not been satisfactorily explained. Vaughn and Wheeler (3) have succeeded in breaking up the protein molecule by means of absolute alcohol and a dilute alkali into a poisonous and non-poisonous part, the former being apparently the same toxin in various proteins, while the latter shows specific immunity properties. It is possible that this toxin derived from the protein molecule in the anaphylatoxin and is liberated by the antibodies which have been formed during the period of incubation. The humeral and cellular theories attempt to explain the location of the anti-body, the former locating them in the serum of the body fluids, the latter in certain body cells. The location of the sensitized body cells may determine the location of the symptoms.

Gay and Southard (4) have described in autopsies following experimental anaphylaxis microscopic hemorrhages in 85 per cent of their cases. This occurred in the lungs, brain, spinal cord and peritoneum. Fatty degeneration was widespread in the capillaries, heart muscles, peripheral nerves, voluntary muscle and gastric epithelium. They concluded that the cause of death was a paralysis of the respiratory center.

Rosenau and Anderson (4), on the other hand did not conclude from their experiments that hemorrhages were typical of the condition; although they found congestion of the viscera and occasional hemorrhages. They failed to find fatty degeration.

Aver and Lewis (4) found the lungs distended and failing to collapse on section.

Experimental anaphylaxis has been repeatedly produced in guinea pigs. In five or ten minutes following the second injection rapid breathing sets in with coughing, and the animal becomes very agitated. Paralysis is followed by convulsions and death usually occurs within an hour, and frequently within thirty minutes.

In man the symptoms are much the same. A condition of shock with dyspnoea, rapid and weak pulse and suffusion of the face may be followed by convulsions and even death in the remarkably short periods of one or two minutes.

When a severe form of anaphylaxis occurs treatment is next to impossible. It is well to have a hypodermic of adrenalin mm 15 and atropine gr. 1-100 which may be combined in the same hypo ready for immediate injection when the suspicion of the possibility of even a mild serum hypersusceptibility exists. These drugs often act in the milder reactions like specifics. Adrenalin often miraculously controls the many times distressing urticaria when given hypodermically in 3 minim doses.

Guinea pig experiments have shown the possibility and practicability of desensitization. If a guinea pig is injected intravenously with .01 c.c. of horse serum and in ten days a sublethal dose is given, they may be followed by a large dose immediately and no symptoms will develop (5).

Applied to man Besredka has shown that by giving extremely small doses and repeating them frequently and in increasingly larger doses the individual can be desensitized. One author (6) makes it a practice preceding large initial serum doses intravenously to give .5 c.c. subcutaneously or intravenously, in thirty minutes 1 c.c. in another thirty minutes 2 c.c., and in still another thirty minutes 4 c.c., laying emphasis on the necessity of giving the last two doses intravenously. The patient must feel like St. Sebastian whose picture showng him pierced by many arrows is so often seen in the art galleries. Other writers suggest the simpler method of giving .5 to 1 c.c. of any horse serum some four or five hours before it is given intravenously (7). (Otto and Hoeffer.)

In a rather concentrated experience with both diphtheria and pneumonia serum in a military base hospital during the past year I used routinely a modification of the described methods of desensitization. On admission to both the diphtheria and pneumonia ward every patient was given a minim of serum intradermally producing a small bleb as in the Shick test. The skin reaction at the end of two, twenty-four and forty-eight hours was observed. A history of previous serum administration, asthma, a sensitiveness to horses or a marked inflammatory reaction about the skin test was followed by a subcutaneous in-

jection of 1 c.c. of serum. In four to six hours we felt safe in proceeding with as large doses of serum as we deemed necessary. The type (I) pneumonia cases were always given the subcutaneous desensitization dose several hours before giving the large dose intravenously. Care was exercised to inject the serum very slowly at first in both the intravenous pneumonia injections and the intramuscular diphtheria injections.

Notwithstanding references in the literature to anaphylaxis as a bug-a-boo, I am personally convinced that fatal cases do occur. It seems likely too that with the marked increase in the use of single serum injections for a continually increasing variety of conditions we are likely to encounter anaphylaxis, or at least a hypersusceptibility more often than formerly. We know, too, that anaphylaxis is likely to be more severe when the intravenous route is used. This is no contraindication to the practice of serum therapy, but care should be exercised to desensitize when a case is at all suspicious.

The death of a child following a proplylactic subcutaneous injection of 1000 units of diphtheria antitoxin was reported in one of the State Medical Journals last year (8). Convulsions and death followed in about twenty minutes. At autopsy the lungs were found inflated and emphysematous and the lymphatics were generally enlarged. The intestines contained bile-stained mucus and the thymus was enlarged. This closely resembles the findings in anaphylaxis.

A few days before my arrival at my first military station a fatal case of anaphylaxis occurred during the first few minutes of an intravenous administration of anti strepococic serum. The patient had received serum some three weeks previous. Another case at the same hospital while I was there showed marked symptoms of hypersusceptibility by convulsions and cardiac disturbance a few minutes after a very few drops of diphtheria antitoxin had been given subcutaneously.

Another phase (5) of protein hypersusceptibility can only be touched upon here. This includes the diseases of bronchial asthma, hay fever, angioneurotic edema, and gastro enteritis and a class not definitely decided comprising eczema of infancy, certain chronic arthropathies and epilepsy.

Then too, there are the food and drug idiosyncracies. A beginning is just being made in the exploration of this field and as regards desensitization here we know nothing.

Experiments go to show that protein sensitization is an acquired characteristic which is acutally handed down (2) to the next generation. This may account for its presence when a history of the sensitizing inoculation is missing.

Certain animals may be sensitized to protein through the alimentary canal. No proof that this occurs or does not occur in man has to my knowledge been presented.

I cannot refrain from calling your attention to the marked analogy between protein sensitization and several of the infectious diseases. The incubation period is identical in each case. At the end of this period an eruption appears. It seems most reasonable to suppose that the symptoms of measles, rubella, scarlet, and maybe other exanthemata are the expression of the reaction of anti-bodies and some foreign protein, bacterial or otherwise.

REFERENCES

1.—R. I. Cole—Anaphylaxis and Serum Disease. N. Y. S. Jour. Med. Vol. 17, No. 8.

2—Rosenau and Anderson—Study of the Cause of Sudden Death following the Injection of Horse Serum. Hyg. Lab. Bul. No. 29.

3—Vaughn and Wheeler—Jour. Inf. Dis. June 19-7.

4—C. E. Roser—Jour. Lab. Clin. Med. Vol. 2, No. 8.

5—R. A. Cooke—Protein Sensitization in the Human. Med. Clin. N. A. Vol. 1, No. 3.

6—Friedlander and Rummels—Reaction following use of Antipneumococic Serum. Mil. Surg. March 1918.

7—George Blumer—Importance of Anaphylaxis in Clinical Medicine. Prov. Med. Jour. Vol. 17, No. 3.

8—W. S. Hassler—Death due to Status Lymphaticus following an injection on Diphtheria Antitoxin. Cal. S. Med. Jour. 1918.

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EDITORIAL

THE DISCHARGED SOLDIER

The physician frequently is visited by a man who has been in th service of his country and who needs medical attention. More likely than not this visit opens up a very real opportunity for the physician to do a definite service for the quondam soldier and show a fine quality of patriotism in the form of good advice.

If the man's trouble is not associated with his military service the physician will expedite matters by giving the necessary medical attention at once. If the present physical derangement is the result of or was aggravated by the man's military experience, the physician should inform the patient that he is entitled to government examination, advice and treatment by specialists if required, all without expense of any kind to him. The Government will pay railroad expense necessary to reach the particular government medical center for examination alone. Expenses for board and lodging, hospitalization and even the cost of providing a substitute at his place of business can all be received by sending in to Washington an itemized list with receipts of the money spent. This should all be explained in such a way that the potential patient would feel perfectly free to choose not to be one to his advisor. We all know it is often how a thing is said, rather than what is said.

The Government wants every man who has given his services to his country to feel that his Uncle Sam is his friend and not like his "Deutscher Onkle". The Government is striving to give every soldier and discharged soldier a square deal. As this has to be done by the passing of laws and the sending of decisions and on an enormous scale, delays are necessary and sometimes unnecessary.

Recently a bill presented to the House by Mr. Raegburn of Texas and endorsed by the Bureau of War Risk Insurance offers great promise of radical betterment of certain compensation regulations. If passed and we have Colonel Roosevelt's statement that he believes it will be, disability will be estimated on a percentage basis of one hundred dollars a month instead of thirty as at present. The man who has lost his leg or arm will receive a certain per cent of $100 and the man with both arms gone will get the full hundred. The man with double total disability of whom there is at present, thank God, but one and he with both arms gone and both eyes blinded will be entitled to two hundred a month from the compensation feature and fifty seven dollars and fifty cents from his insurance. This increase to care for the increased cost of living is only square treatment to the man who suffered physically for his country and is the least that can be done.

To provide against future want on the part of dependents the scheme of War Risk Insurance was devised. What with allottments, insurance, laundry, liberty loan and spending money, the American soldier, altho the best paid in the world did not save much during his service. The sixty dollar bonus was not sufficient to cary many over the transition period upon return to civilian life particularly injured or sick. The larger per cent of insurance was allowed to lapse. Provisions allowed the reinstatement of the insured upon payment of the premiums in arrears.

On July 15, 1919 a decision by Secretary of the Treasury, Carter Glass, makes reinstatement within eighteen months possible by the payment of only two months War Risk Insurance. As the applicant was not covered during the lapsed time, it was rightly considered unjust that he should have to pay for some-

thing he did not receive. The premium for the two months pays for the month of grace during which he was covered when his insurance lapsed and for the first month of reinstatement.

In order to become reinstated the applicant simply has to write to the Bureau of War Risk Insurance Division, Washington, D. C., stating the following:

The amount of insurance to be reinstated and the name of each beneficiary.

The full name (front, middle and last) of the applicant with his complete address.

The rank at time of applying for insurance.

The army serial number, if formerly in the army.

The number of the insurance policy certificate if known.

The applicant must state that he is in as good physical condition as he was when his policy lapsed.

A check, draft or money order payable to the Treasury of the United States for two months premiums for the amount desired reinstated should accompany this information.

This insurance can be converted without medical examination any time within five years to one of the so called line policy bearing no restrictions as to occupation or where the insured desirous to travel and with a total disability clause payable to any age. The converted policy is considerably cheaper than insurance obtainable in any other reliable company and is an additional consideration to the man who has rendered his services to his country.

The disadvantages are these incident merely to the establishment of a new business of enormous properties and carried on at long distance.

SOLVING THE PROBLEM OF A STATIONARY POPULATION

The importance of prenatal care in France is appreciated by all conversant with the fact that for years prior to the war the population of the country was numerically stationary. During the war, the death rate far exceeded the birth-rate. Recognizing these facts, prenatal care was established in France by Doctor F. L. Adair, associate professor of Obstetrics and Gynecology in the University of Minnesota, Minneapolis, Minn., under the auspices of the American Red Cross Children's Bureau.

The work has been developed since January 1st of this year by Doctor Adair, who had charge of the Maternal Welfare work of the Children's Bureau until his recent return to the States. It will be continued by the French authorities at the school of Puericulture of Child Welfare established by the bureau in connection with the Medical College of Paris. An investigation of prenatal care was first conducted by Doctor William Palmer Lucas in September, 1918, but the push at the front created a war emergency which prevented the establishment of the department at that time. After the signing of the armistice, it was possible to begin the work so greatly needed by the people and activities were opened in the fourteenth and ninteenth arrondissements. A little later, at the Dispensary of Bicetre, clinics for nurslings and children were being conducted by the Red Cross Children's Bureau. The purpose of this bureau was to get in touch with as many prospective mothers as possible and to give them all the medical and social aid in its power.

In the fourteenth arrondissement, the nursing and visiting work was done by French women under the direction of Miss Nellie Reed of Washington, D. C., of the American Red Cross. During the first six months, about 200 pregnant women were cared for in these prenatal clinics in the arrondissements.

Nearly as important as the medical attendance was the social work among the pregnant women. In all hospitals and consultations of two arrondissements, a program of social service was conducted. At the consultations, the inquiries were made as to the needs of the patients, whether the women knew how, or were able to carry out the doctor's prescriptions; knew how to prepare for the needs of herself and child; and individual cases were followed up to see if they attended the consultations as often as necessary. If the women were in need of assistance, it was given them.

Visitors went into the wards of the maternity hospitals to keep in contact with the accouchees and give them the social help they

needed with a view of assisting them to adapt themselves to their new problems. Talks upon how a pregnant woman should dress, how to prepare a layette, practical demonstrations of care to be given the new-born baby, in personal hygiene and improvements in the hygiene of the home were given. Through these activities over 500 prospective mothers were interviewed and advised how best to meet their new problems. This work was only conducted during two months and was eminently successful.

It is too soon to predict any result of the work, but the mothers respond most cordially and are anxious to profit by the advice given them by the American Red Cross workers. In many cases, letters of thanks and calls from the husband will express the appreciation of the safe delivery of the child.

In the short time during which the work was established in two sections, with a population of about 600,000 persons, about 500 cases were cared for in the consultations in both a medical and social way.

The success of the prenatal work of the American Red Cross under Dr. Adair has led to its permanent establishment. In Bicetre, the work will be continued by the municipality. In the fourteenth arrondissement, the Patronage Franco-American in close connection with the Mairie has arranged for its continuance and an "ouvre" was formed in the nineteenth arrondissement to carry on the whole plan of work.

It is realized by all who have studied the subject that there is no more important welfare work in France than that dealing with maternity and its effect on the increase of population, so vital to the future of France.

A NEW COVER

Times and styles change and so with the medical magazine. While the true value of a magazine lies within the covers, we believe the change of cover which appears for the first time on this issue a distinct step in the right direction. To give honor where honor is due the change was instigated by the Rochester member of the Editing and Publishing Committee.

In Grecian days a statue must be perfect when seen from the rear as when seen from the front for the reason that the Gods could look around the statue. It will be the effort to construct Minnesota Medicine so that the present day critics will find no flaws as they look not merely on front and back cover but thru the work of art.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNESOTA STATE MEDICAL ASSOCIATION

The annual meeting of the Minnesota State Medical Association, will be held in Minneapolis, October 1st, 2nd and 3rd. It is very desirable that every member of the association who possibly can, be present at the meeting.

The House of Delegates will hold its first session in the Library rooms of the Hennepin County Medical Society, at 2:00 P. M. Wednesday, October 1st. A joint session of all the members will occur at the Gold Room, Hotel Radisson, Thursday morning at nine o'clock. This meeting will be addressed by Mayor J. E. Meyers of Minneapolis. Immediately following the Surgical Section will convene in the Gold Room for its first scientific session and the Medical Section will meet at 9:45 in the Library rooms of the Hennepin County Medical Society in the Donaldson Building.

Following the usual custom, there will be four scientific sessions, the Medical and Surgical Sections meeting in the places indicated above.

Friday afternoon there will be a joint session in the Gold Room at which time the President will deliver his address, and this will be followed by group papers on subjects of great interest.

The annual banquet will occur Thursday night, and at that time, the members will have opportunity of hearing Governor J. A. A. Burnquist and President M. L. Burton, and Dr. W. W. Herrick Associate Professor of Medicine, Columbia University.

Programs of exceptional interest have been arranged for both the Medical and Surgical sections. Clinics will be held Wednesday and Saturday mornings in Minneapolis, but will in no way interfere with the scientific discussions of the regular program. The complete program will be mailed you within a short time.

The Women's Auxiliary of the Hennepin County Medical Society are arranging for the entertainment of all visiting ladies.

It is earnestly hoped that you will arrange to be present at all these meetings.

NEW YORK AND NEW ENGLAND ASSOCIATION OF RAILWAY SURGEONS

The twenty-eighth annual session of the New York and New England Association of Railway Surgeons will be held at the Hotel McAlpin, New York City, on Monday, October 20th, 1919. A very interesting and attractive program has been arranged. A symposium on "The Modern Treatment of Infected Wounds" will be presented by leading surgeons. Railway surgeons, attorneys and officials and all members of the medical profession are cordially invited to attend.

Dr. J. S. Hill,
President,
Bellows Falls, Vt.

Dr. George Chaffee,
Corresponding Secretary,
Binghamton, N. Y

OBITUARY

DR. GEORGE S. BRIGHAM

Dr. George S. Brigham of St. Cloud died on August 30th, 1919. Dr. Brigham was born in Bakersfield, Vermont, on June 16, 1845. He graduated from the McGill University, Montreal, Canada in 1871. He started to practice medicine in Sheldon, Vermont and after remaining there for three or four years he moved to Austin, Minnesota. He remained at Austin until 1878 and then moved to St. Cloud where he has made his home since. He is survived by his widow and three children.

DR. WILLIAM BURKE

Dr. William Burke was killed in an automobile accident on August 17th. Dr. Burke was born in Chatfield, Minn. in 1889. He graduated from the Chatfield High School and from St. Thomas College in 1910. He studied medicine at the St. Louis University and graduated in 1915. After spending a year as interne at the St. Louis Hospital, he located at Preston where he was associated with Dr. Grinnell for a year. In January, 1918 he located at Wykoff where he practiced until his death. His parents survive him.

DR. GEORGE R. CURRAN

Dr. George R. Curran died at his home in Mankato, September 1. The immediate cause of his death was dropsy and heart trouble. He was born at Cannon Falls, Minn., July 1, 1863, receiving his early education in the country schools of Minnesota, following which he attended the Hastings High School. He graduated from the Carleton College in 1887 and then entered the medical department of the University of Michigan from which he graduated in 1892. He at once began to practice at Worthington, Minn. where he remained for nine years. Dr. Curran then spent a year in Europe taking post graduate work. Upon his return he located at Mankato where he practiced until last June at which time he was obliged to give up practicing on account of ill health. Dr. Curran was a member of the Blue Earth County Medical Society, Minnesota State Medical Association, Southern Minnesota Medical Association, Southwestern Medical Society and the American Medical Association. Dr. Curran's widow and one daughter survive him.

DR. J. F. MULHOLLAND

Dr. John F. Mulholland died at the home of friends in Jordan on August 24th. He was born at Pawtucket, Mass. on February 22, 1849. He graduated from Rush Medical College and began to practice at Centerville, Wis., later at New Richland, Minn., and in 1879 came to Jordan where he practiced for sixteen years. He then took up the speciality of eye, ear, nose and throat diseases and practiced for several years in Manitowoc, Kenosha and St. Paul. He returned to Jordan five years ago. Three brothers and two sisters survive him.

CORRESPONDENCE

Paris le 14 Mai, 1919.

114 Boulevard St. Germain.

Dear Sir,

I am sending you the copy of a note that has been published in February at the French Scientific Academy.

I am sending you this, so that you may in publishing it in your paper give your compatriotes an opportunity of treating the terrible calamity (influenza). About 500 patients have been successfully treated by myself with antipest serum.

Doctors in Paris, and in the country have employed this treatment with the greatest success. This mode of non specific serotherapy may seem very strange, but we must remember that the serum of the Pasteurellose of the porc (Chambellan et Jouhau) protects also against the other Pasteurelloses.

I started from that idea when I used antipest serum.

I shall send you later on:

1. The cultural characters of the micro organism, isolated in the blood of almost all the patients I have treated.

2. A certain number of observations of very abnormal cases which had caused mistakes in the diagnostic.

I will give you all the complementary informations that you may need and believe me, dear sir.

Yours truly,

E. Polley.

P. S. This note has been published in the Lancet No. 4990, April 19, page 656. Included you will find also cuttings of French papers.

OF GENERAL INTEREST

Dr. W. E. Richardson, Slayton, has moved to Pipestone.

Dr. M. C. Piper formerly of Sanborn has located at Rochester.

Dr. S. R. Fraker of Cass Lake will move to Cedar Rapids, Iowa.

Dr. M. B. Ruud of Alexandria has removed to Grand Forks, N. D.

Dr. O. E. Stewart of Bricelyn has been promoted to the rank of Major.

Dr. Leon G. Smith formerly of Ellsworth, Wis. has located at Montevideo.

Dr. O. N. Meland has returned from overseas service and has located at Warren.

Dr. F. B. Mach of Minneapolis is still stationed at Brest, France, on hospital duty.

Dr. R. H. Wald has returned from France and will resume his practice at Hastings.

Dr. L. W. Barry announces the opening of his office at 544 Lowry Bldg., St. Paul.

Dr. Selmer Gausemel recently returned from the army and will locate in Kenyon.

Dr. W. F. Bleisfuss will leave Elgin to take up Public Health work at Rochester.

Dr. J. D. Geissinger announces the opening of his office at 544 Lowry Bldg., St. Paul.

Dr. P. C. Pillon has returned to Paynesville after serving for ten months in France.

Dr. G. L. Baker of Moorhead will move to Rochester where he will join the Mayo Clinic.

Dr. L. M. Boyd of Alexandria has returned from service and will resume his practice.

Dr. Fred Franchere, who has been in service has resumed his practice at Lake Crystal.

Dr. G. T. Haugen has sold his practice in Battle Lake to Dr. W. S. Broker of St. Paul.

Dr. M. J. Shaughnessy will leave Wabasha for Framimham, Mass., about October 1st.

Dr. P. L. Berge will again locate in Brainerd after serving in the medical corps of the army.

Dr. I. J. Murphy announces the opening of his office at 506 Donaldson Bldg., Minneapolis.

Dr. W. A. Meierding has received his honorable discharge and will again locate at Springfield.

Dr. M. C. Welch has returned from France and has opened his offices at 821 Lowry Bldg., St. Paul.

Dr. C. A. Lindberg has given up his practice at North Branch and will go to Washington, D. C.

Dr. Stanley Robert Maxeiner, Minneapolis has been appointed Major in the Medical Reserve Corps.

Dr. A. F. Strickler, Sleepy Eye, has discontinued the practice of medicine and gone into business.

Dr. L. M. Keene has returned from service in the army and will resume his practice at Alexandria.

Dr. Harry Clark formerly of Clear Lake will locate at St. Cloud. Dr. Clark recently returned from France.

Dr. Cora Allen returned to Heron Lake after having served a year with the American Red Cross in France.

Dr. G. T. Nordin has returned from France and has opened offices at Lake Street and Chicago Ave., Minneapolis.

Dr. D. F. McCann has returned from services in the army and has again associated with Dr. Gilmore of Bemidji.

Dr. Alexander Archibald has returned to Rochester after having served with the Canadian medical forces since July, 1917.

Dr. C. R. Sanborn has opened offices in the Miles Block, Bemidji, resuming his practice after having served in the army.

Dr. W. D. Beadie, St. Paul, has moved to Cannon Falls, where he will have charge of the Mineral Springs Sanitarium.

There is an opening for a physician at Erwin, South Dakota. Communicate with Druggist F. L. Shannon of Erwin.

Dr. A. M. Kendahl of Jasper will take a post graduate course in the Chicago hospitals and will return in about two months.

Dr. J. F. Corbett announces that he has returned to civil practice of surgery at 808 Physicians and Surgeons Bldg., Minneapolis.

Dr. A. A. Peterson, a graduate of the Northwestern University of Chicago has entered partnership with Dr. J. E. Rheim of Mora.

Dr. and Mrs. C. M. Roan of Minneapolis have sailed on a visit in the Scandinavian countries. They will return about November 1st.

Dr. Merritt W. Wheeler who has served with the medical corps in France has returned and resumed his practice at Hutchinson.

Dr. H. J. Thornby has sold his practice at Barnesville and will locate at Moorhead and become associated with Dr. V. E. Verne.

Dr. Walter Scarborough will form a partnership with Dr. A. M. Kendahl of Jasper. Dr. Scarborough formerly practiced in Chicago.

Dr. M. A. Desmond who has been stationed at Fort Snelling has returned to Glenwood. The doctor will move very soon to Washington.

Miss Emma Potter, R. N., who served in the Red Cross Service overseas has been appointed school nurse for the New Ulm schools.

Miss Mary Fraser, 4331 Fremont Ave. So., Minneapolis would like a position as a Technician with a group of doctors or in an institution. Miss Fraser is a graduate from the University of Minnesota in

1913 and for the last year has worked in a French Hospital.

Dr. J. F. Hammond has opened offices at 642 Lowry Bldg., St. Paul. Dr. Hammond has served with the British forces since March, 1915.

Dr. J. H. Drake formerly of Hardlin, Montana, will locate at Baudette. Dr. Drake recently received his honorable discharge from the army.

Dr. John A. Lepak announces the opening of his office at 544 Lowry Bldg., St. Paul. Dr. Lepak will limit his practice to internal medicine.

Dr. Alexandria Josewich, 707 Physicians and Surgeons Building, Minneapolis has returned from Camp Bowie where he was detailed for the last two years with the base hospital.

Dr. E. A. Meyerding returned to St. Paul after having served twenty-seven months in the army. Dr. Meyerding will resume his position as director of the division of school hygiene.

Dr. Fred L. Adair has returned to Minneapolis from overseas where he spent a year in the service of the American Red Cross, being detailed to work with the French commission.

Dr. William J. Cochrane formerly of Lake City, announces the opening of his offices at 609 La Salle Bldg., Minneapolis. His practice will be limited to diseases of the eye, ear, nose and throat.

Dr. W. R. Hand of Elbow Lake knows of several good locations for physicians in North Dakota; he will assist in the location of good men there without expense to them from a purchase standpoint.

Dr. George E. McGeary, formerly City Physician of Minneapolis and at one time Acting Superintendent of the Minneapolis City Hospital, has moved to Browns Valley where he will have charge of the hospital.

New Ulm has three members of the medical profession on the Board of Education viz., Dr. Geo. B. Weiser, President, who has served in that capacity continuously for twenty years, Dr. Jos. H. Vogel and Dr. G. F. Reineke.

Dr. Frank W. MacKoy has resigned as Medical Director of the Mudbaden Sanitarium, Jordan, Minn., to return to his former position as head of the department of metabolic diseases, Sacred Heart Sanitarium, Milwaukee, Wis.

Dr. O. C. Strickler gave a dinner to the medical profession of New Ulm in honor of Major O. J. Seifert, who recently returned from overseas service in France. Dr. Seifert had charge of Ambulance Train No. 58. He has resumed his practice in New Ulm.

Dr. Gates of the Rockefeller foundation, who had been working particularly with the epidemic cerebrospinal meningitis problem, gave a talk to the St. Mary's hospital staff Duluth the evening of September 4th. Dr. Gates was in close touch with the meningitis situation in our camps during the war period. His recent work in the Rockefeller Institute in standardizing antimeningococcus serum has been of enormous benefit to the profession at large. It is another evidence of the great good coming out of the Rockefeller foundation.

St. Mary's hospital in Duluth reports the organization of a staff. This has been accomplished by the invitation to join the staff of the men who were doing the major part of their work in St. Mary's hospital. Monthly meetings are held, and a strict effort is being made to conform to the directions and wishes of the American College of Surgeons in the matter of the keeping of hospital records, card indices, follow up systems, etc. It is not the intention of these staff meetings to encroach upon the regular province of the County Society, but rather to keep all the men working in connection with the hospital in touch with the work that is being done, with particular emphasis upon a discussion of the pathological data accumulated, the interesting developments in the Roentgen department, and to harmonize the interests and purposes of the hospital and the attending physicians.

NEW AND NON-OFFICIAL REMEDIES

During August the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Nonofficial Remedies:

Calco Chemical Co.:
Cinchophen-Calco.
Geck Laboratory:
CULTURE-LAC.
Eli Lilly and Co.:
Tetanus Antitoxin-Lilly.
Fred I. Lackenbach:
B. Coli Bacterin (Spec. Bact. Vac. No. 12)
Gonococcus Bacterin (Spec. Bact. Vac. No. 9)
Staph-Acne Bacterin (Spec. Bact. Bac. No. 6)
Whooping Cough Bacterin (Spec. Bact. Vac. No. 14)
Staphylococcus Bacterin (Spec. Bact. Vac. No. 1)
Streptococcus Bacterin (Spec. Bact. Vac. No. 10)
Typhoid Bacterin (Spec. Bact. Vac. No. 17)
Typhoid-Paratyphoid Bacterin (Spec. Bact. Vac. No. 13)

Barbital Sodium—Abbott.—A brand of barbital sodium which complies with the New and Nonofficial Remedies standards. Barbital sodium is the soluble sodium salt of barbital (veronal). Barbital sodium was first introduced as veronal sodium and medinal. For a discussion of the actions, uses and dosage of barbital sodium see New and Nonofficial Remedies, 1919, p. 83. The Abbott Laboratories, Chicago.

Ovarian Substance—Hollister-Wilson—The entire fresh ovary (including the corpora lutea) of the hog,

cleaned, freed from fat, dried and powdered. It contains no diluent or preservative. For a discussion of the actions and uses of ovary preparations, see New and Nonofficial Remedies, 1919, p. 202. The dose is from 0.06 to 0.2 Gm. (1 to 3 grains). The Hollister-Wilson Laboratories, Chicago.

Desiccated Corpus Luteum—Hollister-Wilson.—The fresh substance from the corpora lutea of the hog, dried, freed from fat and powdered. It contains no diluent or preservative. For a discussion of ovary preparations, see New and Nonofficial Remedies, 1919, p. 202. The dose is from 0.03 to 0.12 Gm. (½ to 2 grains). Hollister-Wilson Laboratories, Chicago.

Sodium Dioxide, Dental—R. and H.—A brand of sodium peroxide complying with the New and Nonofficial Remedies standards, but containing at least 90 per cent of sodium peroxide, and iron not to exceed 0.006 per cent. For a discussion of the actions and uses of sodium peroxide, see New and Nonofficial Remedies, 1919, p. 216. Roessler and Hasslacher Chemical Co., New York (Jour. A. M. A., Aug. 23, 1919, p. 607).

B. Coli Bacterin (Special Bacterial Vaccine No. 12.)—A colon bacillus vaccine (see New and Nonofficial Remedies, 1919, p. 283), marketed in 10-Cc. vials, each cubic centimeter containing 5,000 million killed Bacillus coli. Fred I. Lackenbach, San Francisco.

Gonococcus Bacterin (Special Bacterial Vaccine No. 9).—A gonococcus vaccine (see New and Nonofficial Remedies, 1919, p. 285), marketed in 10-Cc. vials, each cubic centimeter containing 1,000 million killed Gonococcus. Fred I. Lackenbach, San Francisco.

Staph-Acne Bacterin (Special Bacterial Vaccine No. 6).—A mixed bacterial vaccine (see New and Nonofficial Remedies, 1919, p. 296), marketed in 10-Cc. vials, each cubic centimeter containing 500 million killed Staphylococcus albus, 500 million killed Staphylococcus aureus, and 50 million killed Bacillus acne. Fred I. Lackenbach, San Francisco.

Whooping Cough Bacterin (Special Bacterial Vaccine No. 14).—A pertussis bacillus vaccine (see New and Nonofficial Remedies, 1919, p. 287), marketed in 10-Cc. vials, each cubic centimeter containing 2,000 million killed B. Pertussis. Fred I. Lackenbach, San Francisco.

Staphylococcus Bacterin (Special Bacterial Vaccine No. 1).—A staphylococcus vaccine (see New and Nonofficial Remedies, 1919, p. 289), marketed in 10-Cc. vials, each cubic centimeter containing 2,000 million killed Staphylococcus albus, 2,000 million killed Staphylicoccus aureus, and 1,000 million killed Staphylococcus citreus. Fred I. Lackenbach, San Francisco.

Streptococcus Bacterin (Special Bacterial Vaccine No. 10).—A streptococcus vaccine (see New and Nonofficial Remedies, 1919, p. 291), marketed in 10-Cc. vials, each cubic centimeter containing 1,000 million killed Streptococcus. Fred I. Lackenbach, San Francisco.

Typhoid Bacterin (Special Bacterial Vaccine No. 17).—A typhoid vaccine (see New and Nonofficial Remedies, 1919, p. 292), marketed in 10-Cc. vials, each cubic centimeter containing 1,000 million killed B. Typhosus. Fred I. Lackenbach, San Francisco.

Typhoid-Paratyphoid Bacterin (Special Bacterial Vaccine No. 13).—A typhoid vaccine (see New and Nonofficial Remedies, 1919, p. 292), marketed in 10-Cc. vials, each cubic centimeter containing 1,000 million killed B. Typhosus, 750 million killed B. Paratyphosus "A", and 750 million killed B. Paratyphosus "B". Fred I. Lackenbach, San Francisco.

Tetanus Antitoxin—For Human Use: Purified, Concentrated (Globulin).—A concentrated tetanus antitoxin (see New and Nonofficial Remedies, 1919, p. 266), marketed in syringes containing 1,500 and 5,000 units; in ampules containing 10,000 units, with apparatus for injection. Eli Lilly and Co., Indianapolis, Ind. (Jour. A. M. A., Aug. 30, 1919, p. 691).

PROPAGANDA FOR REFORM

Arsenoven S. S. and Solution of Arsenic and Mercury not Accepted.—The Council on Pharmacy and Chemistry reports that Arsenoven S. S., sold by the S. S. Products Co., Philadelphia, and Solution of Arsenic and Mercury (formerly called Arseno-Meth-Hyd) of the New York Intravenous Laboratory, New York, are inadmissible to New and Nonofficial Remedies because unwarranted therapeutic claims are made for them and because the names are not descriptive of the composition of these preparations. Arsenoven S. S. is claimed to contain dimethylarsenin 15.4 grains, mercury biniodid 1/10 grain, sodium iodid ½ grain. Dimethylarsenin is asserted to be similar to sodium cacodylate, but with a more pronounced therapeutic action. Solution of Arsenic and Mercury comes in three dosages, 2 gm., 1.5 gm., and 0.7 gm., respectively. The 2 gm. form is claimed to contain 2 gm. (31 grains) of sodium dimethylarsenate (cacodylate), U. S. P., and mercury iodid 5 mg. (1/12 grain) in 5 c. c. of solution. Both preparations are advised for the treatment of syphilis, intravenously. The report of the Council reminds physicians that cacodylates have been found inefficient as spirocheticides and warns against the abuses—often dangerous—to which patients are frequently subjected when "intravenous therapy" is employed (Jour. A. M. A. Aug. 2, 1919, p. 353).

Hormotone and Hormotone Without Post-Pituitary—The Council on Pharmacy and Chemistry reports that Hormotone of the G. W. Carnick Company is advertised as "A pluriglandular tonic for asthenic conditions." The same firm also advertises Hormotone Without Post-Pituitary for use "in neurasthenic conditions associated with high blood pressure." These preparations are sold in the form of tablets for oral administration. Each tablet of Hormotone

is said to contain 1-10 grain desiccated thyroid and 1-20 grain of entire pituitary together with the hormones of the ovary and testes—the amounts and the form in which the latter are supposed to be present are not given. From this it is seen that the only definite information given the medical profession regarding the composition of Hormotone is that it is a weak thyroid and a still weaker pituitary preparation. Hormotone without Post-Pituitary is said to contain in each tablet 1-10 grain desiccated thyroid, and to "prevent" "hormone bearing extracts of thyroid, anterior pituitary, ovary, and testes." The Council declared these preparations inadmissible to New and Nonofficial Remedies, because: (1) Their composition is semisecret. (2) The therapeutic claims are unwarranted. (3) They are sold under names not descriptive of their composition, but suggestive of their indiscriminate use as "tonics". (4) In the light of our present knowledge, the routine administration of pluriglandular mixtures is irrational (Jour. A. M. A., Aug. 16, 1919, p. 549).

Bromide and Acetanilid Compound.—The period of acceptance having expired for Granular Effervescent Bromide and Acetanilid Compound-Mulford, the Council on Pharmacy and Chemistry directed its omission from New and Nonofficial Remedies because an examination of the available evidence demonstrated that mixtures of this kind are inimical to rational medicine and the public. The use of mixtures of bromide and acetanilid in fixed proportions is irrational and prone to induce their indiscriminate use by the public—and this despite the perfectly frank declaration of the composition of this mixture by the manufacturer (Rep. Coun. Pharm. Chem. 1918, p. 58).

Holadin and Bile Salt Mixtures.—The period of acceptance having expired, the Council on Pharmacy and Chemistry decided to omit the following mixtures from New and Nonofficial Remedies: Holadin and Bile Salts-Fairchild, Capsules of Bile Salts, Succinate of Soda and Phenolphthalein-Fairchild, Capsules of Holadin, Bile Salts and Phenolphthalein-Fairchild; Capsules of Holadin, Succinate of Soda and Bile Salts-Fairchild. The Council holds that these mixtures are superfluous and that the several substances of which they are composed should be used singly, or at most with greater attention to the individual requirements of the patient than is possible when these fixed mixtures are prescribed. Despite that these mixtures have been in use for more than nine years, there is no satisfactory evidence that they possess any advantage over the simple laxatives, or the preparations of bile or pancreatic extract. The dismissal of the holadin and bile salt mixtures does not involve the question of the usefulness of holadin or of bile salts alone. On the contrary, the possible usefulness of these preparations is admitted and they are retained in New and Nonofficial Remedies. It is the combination of holadin, bile salts, sodium succinate and phenolphthalein to which objection is made by the Council (Rep. Coun. Pharm. Chem., 1918, p. 59).

Pollen Antigen.—Pollen antigen-Lederle is a pollen extract which represents the pollen of plants blooming in spring and in fall. The Council on Pharmacy and Chemistry declared these preparations inadmissible to New and Nonofficial Remedies because there appeared no warrant for complex pollen preparations representing both spring and fall pollens. In consideration of the essentially experimental status of the use of pollen preparations for the prevention and treatment of "hay-fever," such products should be as simple as possible. Hence pollen protein preparations prepared from the pollen of two or more species of plants are accepted for New and Nonofficial Remedies only if there is evidence that the given combination is rational (Rep. Coun. Pharm. Chem., 1918, p. 65).

Restoria.—"Restoria for Bad Blood" is sold by the Restoria Chemical Company of Kansas City, Mo. It is sold as a sure cure for syphilis, but is also recommended for rheumatism, kidney trouble, lumbago, eczema and catarrh. The A. M. A. Chemical Laboratory reports that Restoria contains no mercury or arsenic but does contain iodid, probably as potassium iodid, equivalent to 1.693 gm. per hundred Ccc. It also was found to contain much vegetable extractive, some alkaloidal drug and a bitter oil or oleoresin (Jour. A. M. A., Aug. 9, 1919, p. 438).

Cinchophen: Formerly Atophan.—The Chemical Foundation, Inc., which has purchased some 4,500 German-owned patents, many of them for synthetic drugs, proposes to continue the wise policy of the Federal Trade Commission by requiring that those who receive licenses for the use of patents for synthetic drugs must use a common designation for each drug selected by the foundation. Cinchophen has been selected as the designation for the substance introduced as atophan (also described in the U. S. Pharmacopoeia under "phenylcinchoninic acid"). In consideration of this action on the part of the Chemical Foundation and also because physicians found it difficult to use the pharmacopoeial name phenylcinchoninic acid, the Council on Pharmacy and Chemistry has recognized the contrasted term cinchophen as the name for the drug introduced as atophan (Jour. A. M. A., Aug. 9, 1919, p. 427).

Capell's Uroluetic Test.—A "Doctor" H. F. Matthews, representing the Capell Laboratory, Omaha, is demonstrating an asserted new test for syphilis—Capell's Uroluetic test. J. O. Cobb, M. D., Senior Surgeon in Charge U. S. Marine Hospital, Chicago, writes that in a demonstration of the test (which is to be applied to the urine of patients) "Doctor" Matthews was given the same specimen of urine in four different containers, and he read a different degree of reaction for each of them. Capell's Laboratory is apparently conducted by Dr. W. L. Capell. Some years ago, Dr. Capell was con-

nected with a concern known as "Acneine Pharmacal Company." In 1917, W. L. Capell was connected with Capell, Cameron Co., Inc., which was selling "Capell's Uroluetic Test," "Capell's Treatment for Syphilis" and other remedies. The treatment for syphilis (mercarodin) is sold by Capell's Laboratory. It also sells Acneine, which apparently is the same product that was sold in 1906 under the name "Sambu-Co." by the Holtman-Stringer Co. of Omaha. While the Capell Laboratory still sells proprietaries, it appears to be featuring the "Uroluetic Test" at the present time. The test would be important if it was reliable; unfortunately its scientific value to the sufferer is negligible, compared with its economic value to the exploiter. It is not so much a test for syphilis in the patient as of credulity in the doctor (Jour. A. M. A., Aug. 23, 1919, p. 626).

The Uses of Yeast.—Yeast is one of those remedies that have undergone alternating cycles of use and of disuse; just at present it appears again to be in its ascendency. Recently renewed attention has been called to its laxative qualities. The much debated question whether yeast can be used as a food, can be answered in the affirmative. However, in view of its laxative action, the amount of yeast which can be ingested is limited. Also, owing to its high nuclein content it is contraindicated in gout. As a source of water soluble growth promoting as well as antineuritic vitamin, yeast has become thoroughly established. However, as common foods contain this vitamin, there is little likelihood of its proving of therapeutic value, since it promotes growth only when stunting is due to lack of vitamins. Yeast has been used as an application in acne, for infected wounds and in leukorrhea. Recently the curative value of the oral administration of yeast in various cutaneous disorders has been reasserted (Jour. A. M. A., Aug. 23, 1919, p. 628).

The Council on Pharmacy and Chemistry.—The profession should recognize that the most important factor in the clearing up of the advertising pages of medical journals has been the Council on Pharmacy and Chemistry of the American Medical Association. The Council has been criticized both by the manufacturer and the profession, but it has gone on doing the work for which it was created. Sometimes the practitioner feels that his clinical experience justifies the use of a preparation which the Council has not found reoson to accept. While apparent clinical results may be misinterpreted, the carefully conducted examinations of the Council are likely to be definite and dependable. We are becoming more and more convinced of the unreliability of reports of clinical use by physicians. Practitioners should avail themselves of the Council's investigations by frequent reference to the reports of the Council. If they would keep on hand a copy of New and Nonofficial Remedies for ready reference and prescribe only of the new preparations those that have been accepted by the Council, they would aid materially in the establishment of a scientific and reliable therapeusis (Jour. Kansas Med. Soc., Aug. 1919, p. 193).

S. S. S.—The state of Louisiana has a law prohibiting the sale of venereal disease remedies, except on the written prescription of a licensed physician. In May of this year, the Bureau of Venereal Diseases of the Louisiana State Board of Health notified the druggists of Louisiana that the sale of "S. S. S." ("Swift's Syphilitic Specific" or "Swift's Sure Specific") would meet with the same law enforcement measures as were being waged against any venereal disease nostrum. The result of this notice was a letter sent to various drug stores of Louisiana by the sales manager of the Swift Specific Company declaring that "S. S. S." is not recommended or advertised as a venereal medicine. A few years ago, "S. S. S." was boldly heralded in newspaper advertisements as a "cure" for syphilis (Jour. A. M. A., Aug. 30, 1919, p. 707).

PROGRESS IN MEDICINE AND SURGERY

CLIMACTERIC HYPERTENSION: A STUDY OF HIGH BLOOD PRESSURE DURING AND FOLLOWING THE MENOPAUSE. By Arthur H. Hopkins, M. D. (American Journal of the Medical Sciences, June 1919.)

In this paper Hopkins is endeavoring to make a definite clinical entity of the climacteric type of hypertension, and evidently considers that all the cases of so-called "benign" hypertension fall into this class, and assumes that the male afflicted with the clinical picture of benign hypertension is distinct from this condition insofar that they more nearly approach the terminal sclerotic kidney following arteriosclerosis as described by Stengel.

The paper begins with a brief review of the history with some quotations from Allbutt and Stengel with whose classification he evidently largely agrees. He apparently disagrees to a certain extent with Meara, and assumes that some of the types described by Meara in his recent article probably should be placed in the renal group of hypertension. He emphasizes the fact that these climacteric cases usually occur after the menopause in the sixth decade of life, and that the higher figures usually prevail not only in the systolic but also in the diastolic pressure. The majority of his cases fell within the office practice, of the ambulant type, and he has noted a strikingly healthy appearance, frequently with obesity. The women he says are usually of the higher social class, are energetic, somewhat nervous in temperament, and good livers.

Fibrosis develops in the peripheral arteries usually toward the latter part of the sixth decade, and is evidenced by changes in the retinal arterioles, so

that an ophthalmologist sometimes first recognizes the condition. The chief symptoms that he has noted were chiefly gastric and nervous, constipation with fermentation, so-called "gastric neuroses", nervousness, pain, chiefly in the limbs, and headaches. Some cases also complained of weakness, vertigo and nose bleeding. He insists that these cases are in rather marked contrast as far as the history and course are concerned with the men afflicted with hypertension between the ages of 50 and 60.

He states that he finds that the cardiac embarrassment and pain in the limbs were in preponderance in the males; also that the sclerosis in the peripheral vessels was far more marked and developed considerably earlier in life, whereas in the climacteric type the retinal sclerosis occurred in only two groups, firstly in those occurring at the age of 60, and secondly in those who had a previous history of scarlet fever, pneumonia, or some other acute or chronic infection. He also considered the previous incidence of rheumatism, pneumonia, syphilis, lead, alcohol, and typhoid fever as predisposing causes of the arterial changes in men. His differentiation by means of the renal functional tests and the P. S. P. output, as well as by chemical examination of the urine, is not very convincing. He reports seven cases more or less in detail to show the contrast between his climacteric type of hypertension and the type described by Stengel as the renal sclerotic type following artriolar sclerosis or the arteriolar fibrosis of Gull and Sutton.

In discussing the etiology he places apparently, great significance on the function of the endocrine glands, assuming that by their correlation they form a physiological balance, which is preserved by proper distributions of harmony and antagonism between the functions of the various glands. If one is diseased or removed the balance is upset, and the organism of the individual may be affected by the abnormal action of one or more distant glands of the group.

He calls attention to the adrenal and the pituitary bodies and the thyroid and the ovaries. He believes that the ovarian secretion is correlated with the secretion of the other three, and that with the hypofunction of this gland at the time of the menopause we have a disturbance of balance of function with evidences of probable hyperactivity in the other three glands mentional.

He quotes Vincent, who has shown the cortical enlargement in the suprarenal body during breeding and pregnancy. He also mentions the influence of posterior lobe extract of the hypophysis on the blood pressure, and that the extract of the anterior lobe has a distinct influence on the sexual organs, and also that the gland enlarges during pregnancy. The enlargement of the thyroid gland during pregnancy is mentioned. He attributes the cause of this type of hypertension wholly due to the disturbance in the function of the endocrene glands, and finds no other clear cut etiological factor.

As far as the sequence in the course of the disease is concerned, he believes, like Allbutt in the production of a fibrosis in the vessels, occurring during the latter course of the disease, at about the age of sixty, and finally urges the importance of taking blood pressure estimations of all women at the menopause, as being of diagnostic and therapeutic benefit for the patient.

This interesting paper is going to be continued later on, with a discussion of prognosis and treatment.

OCCURRENCE OF NEW-GROWTHS IN THE ABDOMINAL WALL AFTER LAPAROTOMY

Danforth (Surgery, Gynecology and Obstetrics, Vol. XXIX No. 2) states that fibrous tumors of the abdominal wall are not at all uncommon, as a report in 1904 by Pfeiffer showed a collection of more than 400. Their etiology is not altogether clear. Pregnancy seems to be a definite predisposing factor. They occur in women in a ratio of 7 to 1. It is possible that the stretching of the abdominal wall incident to pregnancy, together with the possible tearing or rupture of some fibers in the aponeurosis of the rectus and oblique muscles may furnish the trauma necessary to the starting of a new-growth.

These tumors occur most frequently in the sheath of the rectus and upon the aponeurosis of the oblique muscles. They are usually irregularly round with rather sharply defined borders, and when they are grasped they are found not to be movable upon the underlying tissue. A very characteristic point is that when the abdominal wall is under tension they disappear, while when it is relaxed they become easily noticeable. They are ordinarily small but have been noted as large as the size of the foetal head. They must be distinguished from sarcoma, hernias of the muscle, lipomata, and from inflammatory growths in scars following laparotomies.

These tumors appear from a few months to five and one half years after operation.

These tumors should be excised immediately. The excision should include the removal of that portion of the aponeurosis which forms the base of the tumor. Excision of the growth should be followed by careful microscopical examination in order that the occasional occurrence of malignancy may not be overlooked.

E. M. Jones.

INGUINAL HERNIA. An Operative Method by Which Close to 100 per cent Cures Have Been Obtained: Franz Torek, M.D., (Annals of Surgery, Vol. LXX No. 1, July, 1919.) reports on an operative method by which close to 100 per cent cures have been obtained, giving a total of approximately 600 cases, out of which two recurred, i.e., one-third of one per cent.

He emphasizes—

1. Clean separation of the vas deferens and the

bloodvessels of the cord from each other as well as from the sac by the removal of all the connective tissue that binds them together, allowing the vas to come out at the bottom of the opening in the transversalis facia and the vessels to come out at the top of it, while the stump of the sac sinks back between the two. A couple of stitches uniting the muscles to Poupart's ligament keep the vas and vessels permanently separated at the site of the internal ring. The introduction of these sutures applies only to the oblique variety of inguinal hernia.

2. Below the vas suturing of Poupart's ligament to the internal obligue and transversus muscles, and often to the rectus muscle, is continued all the way down to the insertion of the pubis. This is of importance in order to avoid recurrence in the shape of direct hernia, as well as for the repair of one already existing.

3. The employment of non-absorbable suture material at those parts were there is tension, his preference being silver wire.

He says that within the abdomen the vas deferens and the bloodvessels of the cord are apart and separate from each other. At the internal inguinal ring they meet at an angle, the vessels approaching the ring from above downward, the vas from below upward (Figs. 1, 2 and 3). At the site where they meet, an open wedge, or infundibulum, exists through which intra-abdominal structures can force their way out, the protrusion being facilitated by this funnel-shaped arrangement. As a matter of fact, when an obligue hernia is formed, it always wedges its way through between the vas and the vessels. The arrangement of the structures at the internal inguinal ring is: Vessels above, vas below, sac between them.

The object of the above named "first point" separating vas and vessels and keeping them apart—is to deprive the peritoneum and the abdominal contents of the opportunity again to obtrude or force themselves between these two structures, as they could so conveniently do while the wedge-shaped arrangement of vas and vessels existed at the internal ring. This arrangement is abolished by establishing a firm, square buttress of abdominal wall between vas and vessels, the buttress consisting of internal oblique and transversalis muscle with its fascia on the one side sutured to Poupart's ligament on the other.

Regarding sutures he advocates use of non-absorbable material silk or silver ware for the first one or two lower sutures were the rectus is approximated to Poupart's ligament.

G. Earl.

TREATMENT OF SYPHILIS IN TUBERCULOUS PATIENTS: Jos. A. Elliott, M.D. (Amer. Jour. of Syphilis, vol. 3, April, 1919). The author speaks of the not uncommon occurrence of finding both a syphilitic and tuberculous infection in the same person. The literature being full of data as to the incidence of tuberculosis among syphlitics. The various investigators, however, worked on markedly different material, causing percentages to vary considerable. Tedeschi reports that 70 per cent of the cases of tuberculosis developing during a period of ten years in his prison service occurred on luetic soil. The other investigators' figures vary from 5 to 43 per cent. Bronfenbrenner attributes the frequency of tuberculosis among syphlitics to the syphilis as such or to the antisyphlitic treatment lowering the resistance of the patient so as to make him more susceptible to a new infection of tuberculosis or render him less resistent against the progress of the disease already contracted. He refers to the enthusiasm many clinicians showed, a few years ago, following a report that tuberculosis was greatly benefitted by mercurial injections. The author states this report was a little premature as it was shown that these patients who showed improvement had syphilis also and that results were only temporary.

According to Hartz (Jour. A. M. A., vol. 55, 1910) to the author and many other observers, mercury was shown to be detrimental to patients with tuberculosis. He says with the advent of Salvarsan, many optimistic results have been reported. The author's experience does not verify this. He gives many case reports of patients with a dual infection treated with arsphenamine alone and comes to following conclusions:

Mercury should be used with great caution in tuberculous patients.

The deleterious effect is not immediate but appears months later as pointed out by Hartz.

Arsphenamine is the drug of choice but should be given in small doses at long intervals as in his experience the ordinary dose accentuates active foci and is proven to cause a flare up in latent lesions.

C. D. Freeman.

EXTIRPATION OF THE LACRIMAL GLAND FOR RELIEF OF EPIPHORA: Christian R. Holmes, (Arch. of Ophth. Vol. XLVIII, No. 4, July) published in 1899 an article recommending extirpation of the larcimal gland in cases where accessive epiphora can not be checked by other means. Although the article aroused considerable interest at the time, the operation did not meet with general approval; in fact it soon became abandoned by most of its adherents. However, Holmes states that although his first operation was performed in 1890, he still sees some of his first cases and all have remained cured.

Why was the removal of the orbital gland abandoned? In the days of septic surgery not infrequently inflammation developed in the wound at times leading to orbital cellulitis with strangulation of the optic nerve and vessels resulting in loss of vision if not of the globe itself.

The removal of secondary lacrimal gland advocated by De Wecker and Terson, does not, in the opinion of the author seem logical for at least 90 per cent of the tears are secreted by the lacrimal gland proper.

Nevertheless, both the palpebral and lacrimal gland proper may be removed without discomfort to the eye for the conjunctival and Krause-Waldeyer mucous glands produce ample moisture for the eye ball.

Extirpation of the lacrimal gland as performed by the author. Through the unshaven brow an incision is made along the margin of the orbit cutting against the bone, starting near the center of the upper orbital arch and carried to a point about 3 mm below the outer canthus. The fascia or septum orbitale is cut through along its attachment to the orbital margin. Care should be exercised to differentiate between fat and gland, the latter appearing a pinkish yellow by electric light. The relation of the anterior edge of the gland to the orbital margin varies slightly; in some cases the gland presents one or two millimeters below, in most cases 2 to 3 millimeters upward and backward from the edge of the bony orbit. By means of a slender, blunt-pointed pair of scissors, broad fixation forceps, small knife and a pair of tenotomy hooks, the gland in its entirety can be removed with but little change in its shape, thereby assuring the operator that the extiration is complete. If desired the palpebral or secondary gland may also be removed by passing a blunt hook through the palpebral fissure and the conjuctiva over the seat of the gland pushed by the assistant up into the wound.

PAUL D. BERRISFORD.

THE TRANSPLANTATION OF THE RECTUS MUSCLE OR ITS SHEATH FOR THE CURE OF INGUINAL HERNIA WHEN THE CONJOINED TENDON IS OBLITERATED. THE TRANSPLANTATION OF THE SARTORIUS MUSCLE FOR THE CURE OF RECURRENT HERNIA WHEN POUPART'S LIGAMENT HAS BEEN DESTROYED: Joseph Colt Bloodgood, M. D., (Annals of Surgery, Vol. LXX. No. 1, July, 1919.) says that the chief cause of recurrence in the lower angle of the wound was due to the fact that, whether the hernia was direct or indirect—the conjoined tendon was either weak or obliterated, and that the ordinary suture or closure of the defect in the abdominal wall was not sufficiently strong to protect from recurrence in the lower angle.

During the recent war he had an opportunity to examine in Maryland a large number of selected service men who were placed in Group B because of inguinal hernia. The conjoined tendon was obliterated in 5 per cent. As the majority of these selective service men volunteered to be cured of their defect in order to render service, he had an opportunity in a few months to operate on more than one hundred cases.

In this type of hernia, when one invaginates the scrotum and introduces the finger into the external ring, little or no resistance is met and the finger passes over the pubic bone, and, as a rule, can be pushed into the space of Retzius behind the rectus muscle. When this anatomical defect is present on both sides the two fingers meet behind the recti.

The weakness in the abdominal wall is therefore bounded laterally by Poupart's ligament and the rectus muscle, and below by the pubic bone. The firm and perfect closure of this opening is hampered by the presence of the cord.

The author says, "When I first transplanted the rectus in order to suture it to Poupart's ligament and thus strengthen the defect in the lower angle of the wound due to the obliteration of the conjoined tendon, I also transplanted the cord and excised the veins as in the Halsted operation (Fig. 2). Since my publication in 1899 we discontinued to transplant the cord and rarely excised the veins, and when this rarer type of inguinal hernia presented itself, we continued the method of transplantation of the rectus, usually with Halsted's modification of transplanting its sheath (Fig. 3), but we did not transplant the cord. As far as I am able to ascertain, in the group in which I had transplanted the cord (Fig. 2) there has been only one recurrence, but since the change in technic of leaving the cord undisturbed in the lower angle of the wound I know of at least four recurrences in operations which I performed myself, and it seems strange that this made no impression."

In conclusion he makes a plea for change in the technic of the usual procedure, when there is every evidence that the chief weakness is in the lower angle of the inguinal canal due to the obliteration of the conjoined tendon, and not in the usual position, in the upper angle where the cord is situated, and through which the testicle descended.

G. EARL.

THE METHOD OF OBTAINING CEREBROSPINAL FLUID BY PUNCTURE OF THE CISTERNA MAGNA. (CISTERN PUNCTURE): Wegeforth, Ayer and Essick, (The American Journal of the Medical Sciences, Vol. CLVII, No. 6.) call attention to the two main routes employed in securing cerebro-spinal fluids from animals. The first is the lumbar, and the other the space between the occipital bone and the first cervical vertebra. In 1913, Dixon and Halliburton secured spinal fluid from dogs by a direct puncture through the occipito-atlantoid ligament. In 1186 punctures of this ligament on cats, injury to the medulla occurred only in 84 per cent. This percentage was further reduced after experience and in the last 527 punctures only three similar injuries occurred. This same route has been successfully used on patients. For introducing the needle, a point is selected in the midline just above the spine of the axis. The needle should be passed inward and upward in a direction continuous with a line passing through the glabella and external auditory meatus. The average distance necessary to insert the needle is about 4 cm. However, one should rely in a large measure on the tactile impression produced when the point of the needle overcomes the resistance offered

by the ligament and dura and passes into the cavity of the cistern. As the anterior wall of the cisterna cerebello-medullaries is formed by the lower part of the medulla and the upper part of the posterior surface of the cervical cord, great care must be exercised in introducing the needle so as not to injure these important structures.

One valuable use for this method is in cases of cerebro-spinal meningitis complicated by spinal-subarachnoid block. The authors report a case where they successfully used this method in this complication. The patient improved decidedly but subsequently died and postmortem revealed complete blockage of the canal at the level of the sixth dorsal vertebra.

It has further been shown that stained solutions introduced by the lumbar route only, do not extend beyond the base of the brain, while when both routes are employed, both the spinal cord and even the convolutions of the brain cortex are reached. In cases of purulent meningitis, punctures have been performed in both the lumbar and occipital region, the needles kept in situ and through and through irrigation with Ringer's solution carried on until the solution from the needle in the lumbar region became free from pus. This method of injecting serum through both avenues is of particular value in cerebro-spinal meningitis in children, in whom there is much greater tendency for blockage of the cerebro-spinal fluid spaces than in adults.

In postmortem work, cerebro-spinal fluid can be more readily obtained by way of the occipital route than by ordinary lumbar puncture.

E. M. Hammes.

THE INTIMATE RELATION BETWEEN THE EAR AND THE EYE AS SHOWN BY THE BARANY TESTS: H. Maxwell Langdon and Isaac H. Jones (Archives of Ophthalmology Vol. XLVII, No. 4, July 1918) call attention to the ophthalmologist to the governing power of the ear over eye movements and equilibrium. It is not generally recognized that the ocular mechanism is dependent upon the ear stimili for precision of movement. Steadiness of central fixation is made possible only by normally acting ears. Tonic impluses from the right ear continually tend to draw both eyes to the left and tonic impluses from the left ear continually tend to draw both eyes to the right. This is definitely proven in that a sudden loss of the function of the right ear invariably results in a rotation of the eyes to the right because the tonic impluses tending to draw the eyes to the left are impaired and there is a resulting spontaneous nystagmus to the left.

Aside from the production of nystagmus in this experimental way the ear in many animals has a decided influence on occular rotations. Barthels makes the statement that rabbits have no trace of voluntary fixation of the eyes but that ocular movements depends entirely upon stimuli from the auditory apparatus and that section of the acoustic nerves in rabbits produce complete loss of eye movements.

It is now definitely known that the ear consists of two organs of distinct and separate functions, the cochlea which is the organ of hearing and the vestibular labyrinth which is the sense organ of balance, the equilibratory portion of the ear consists of two tiny sacs known as the utricle and saccule of three semi-circular canals; the utricle take cognizance of movements in a linear direction anterior-posteriorly and the saccule of movements in a lateral direction; the semi-circular canals are so constructed as to detect rotary movements of the body in all conceivable planes.

The horizontal canal detects movement in a horizontal plane, the two vertical canals the superior and posterior always work together and detect movement in the sagittal, frontal or intermediary vertical planes.

If stimulation of the semi-circular canals causes the eyes to move it is evident that there must be nerve paths between the ear and the eye muscles. A study of over 600 clinical cases including a considerable number of operations and autopsis in the department of neuro-otology at the university of Pennsylvania has brought out certain facts in regard to these pathways some of them definite others needing further analysis. Our present belief in fact is as follows.

1. The fibres from the horizontal semi-circular canals pass through the VIII nerve enter the brain stem at the junction of the medulla oblongata and pons and continue directly to Deiters nucleus and there divide into two paths.

A. The vestibulo ocular tract concerned in the production of the nystagmus. These fibres go from Deiters nucleus to the posterior longitudinal bundle, through which they pass to the various eye muscle nuclei from which through the III and VI nerve they are distributed to the eye-muscles themselves.

B. The vestibulo-cerebral tracts responsible for the vertigo. From Deiters nucleus this path enters the cerebellum through the inferior cerebellar peduncles to the three vestibular cerebellar nuclei of the same side, from which it proceeds upwards through the superior cerebellar peduncle and continues to the cerebral cortex from both sides, but more particularly the opposite side, through the crura cerebri. The cortical areas which receives these fibres are postulated by Mills to be in the posterior portion of the second temporal convolutions adjacent to the cortical areas for hearing.

2. The fibres from the vertical semi-circular canals have a very different course: after passing through the VIII nerve they immediately ascend into the pons and at a point above the middle of the pons they have a division into two pathways similar to the division of the horizontal canal fibres at Deiter nucleus.

A. The vestibulo-ocular tract the fibres entering

the posterior longitudinal bundle to be distributed to the eye muscle and finally to the eye muscle themselves.

B. The vestibulo-cerebellar tract reaches the cerebellum through the middle cerebellar peduncle entering the cerebellar nuclei of the same side; from this point the pathway is identical to that of the fibres from the horizontal canal through the superior cerebellar peduncle to the cerebral cortex of both sides.

The internal ear and these intracranial pathways constitute our conception of the vestibular apparatus and a knowledge of this is of use to the ophthalmologist in the study of occular palsy and spontaneous nystagmus.

The ophthalmologist is primarily concerned with the so-called nystagmus tract and has only a collateral interest in the pathways producing vertigo.

In cases of muscle paresis it has occurred to us that ear stimulation by means of electricity might be used therapeutically as the alternate pull and relaxation of the changing current would possibly succeed in stimulating to action what nerve-fibres there were remaining intact and shorten the time of recovery. We have had no opportunity of trying this so it is in the realm of theory, but we intend to work along this line in the near future.

GEORGE C. DITTMAN.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

Collected Papers of Mayo Clinic, Vol. 10, 1918. W. B. Saunders Co.

Medical Clinics of North America, Vol. 2, No. 6. W. B. Saunders Co.

Textbook of Materia Medica for Nurses. Muirhead. C. V. Mosby Co., $1.50.

Psychiatric-Neurologic Examination Methods. Hoisholt. C. V. Mosby Co., $2.00.

Cerebrospinal Fluid. Levinson. C. V. Mosby Co., $3.00.

Milk. Heineman. W. B. Saunders Co., $6.00.

Don Quixote of Psychiatry. Historico-Medical Press., $2.00.

Surgical Clinics of Chicago, Vol. 3, No. 3. W. B. Saunders Co.

Plastic Surgery. Davis. P. Blakiston's Son & Co., $10.00.

TEXTBOOK OF UROLOGY IN MEN, WOMEN AND CHILDREN. By Victor Cox Pedersen, A.M., M. D. F. A. C. S. Lea and Febiger, Philadelphia and New York. 1919. $7.00.

In the first words of his preface Doctor Pedersen admits that there is "nothing new under the sun." If such is the case one must at least concede that the author has omitted nothing of the old for the work is most complete. There has been omitted the usual chapters on Syphilis at the end of the work, for which innovation the author and publisher are to be commended. Urology is in a field broad enough and distinctive enough without that of syphilology.

The chapters on cystoscopy and uretereal catherization are the most complete and definite that I have seen in any text book, constituting almost a reference work for the student and an invaluable text for the beginner in this field.

The same might be said of the chapters on General Principiles of Treatment for the author has included a brief description of electro-therapeutic and mechano-therapeutic measure available for the Urologist.

On account of its completeness, its classifications, and especially the definite exposition as to technique in simple cases as well as the complicated it makes a very good text book for the student and one to which every student might well have access,—to his profit.

E. C. GAGER.

COLLECTED PAPERS OF THE MAYO CLINIC Rochester, Minn. Edited by Mrs. M. H. Mellish. Vol. 10, 1918. Philadelphia and London. W. B. Saunders Company 1919.

The 1919 volume of collected papers from the Mayo Clinic is much like its predecessors. The papers are complete and well edited. Two articles by Taylor on infant feeding and relation of tonsil infection will be of interest to the general practitioner, as will also be Rosenow's report on 200 cases of lobar pneumonia. The articles on surgical subjects, as handled by W. J. and C. H. Mayo, Judd and assistants, are smooth, enlightening and of great value. Paper and print is good, index of subjects, contributors and references complete.

H. J. O'BRIEN.

ESSENTIALS OF SURGERY. By Archibald L. McDonald, M. D. J. B. Lippincott Company, Philadelphia and New York. Price $2.00.

To quote the author this book was written "in the belief that the nurse can more intelligently assist in the care of her patient if she has a reasonable conception of the conditions present and of the indications present and of the indications to be met in treatments."

The first three chapters are devoted to the study of bacteria and their connections with wounds. Surgical diseases are discussed concisely with respect to their cause, result, treatment and complications. Special regions of the body are given individual chapters. Although the author assumes the nurse to have had an elementary knowledge of Anatomy and Physiology, enough is given to make the surgical conditions clear to the graduate nurse.

A complete Glossary adds materially to the value of the book.

MISS AGNES TEISBERG, R. N.

MINNESOTA MEDICINE

Journal of the Minnesota State Medical Association

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ORIGINAL ARTICLES

THE OPEN AND CLOSED TREATMENT OF FRACTURES, NEW METHODS AND NEW APPARATUS USED*

By ARCHA E. WILCOX, M. D., Minneapolis
Assistant Professor of Surgery, University of Minnesota; Consulting Surgeon Minneapolis City Hospital

The broad title of this paper has been chosen for the purpose of giving the author an opportunity to present certain views pertaining to the open and closed methods in the treatment of fractures rather than to confine the remarks to a detailed discussion of any one particular type of treatment.

Whichever method is used it is obvious that the best results follow; first, a complete reduction of deformity of the fragments; second, holding the fragments in place; third, obtaining osseous union; and fourth, the restoration of function of the affected part.

It is obvious that with the closed method the reduction of deformity, even in a simple fracture, is more difficult and uncertain than when the open method is adopted, but in either event many difficulties are often encountered. However, no simple fracture should be treated by any other than the closed method, until repeated and untiring efforts to reduce the fracture, checked and rechecked by the X-ray or fluoroscope, have failed.

After conscientious efforts have failed to accomplish reduction, or after reduction has been obtained but by suitable splints reduction cannot be maintained, then there arises a positive indication for the open method to be instituted. However, the more painstaking a surgeon is regarding his efforts to coapt fragments, and in the intelligent application of splints, the less often will the open method be indicated.

*Presented before the Southern Minnesota Medical Association at Mankato, Jan. 20-21, 1919.

Assuming that the closed method is suitable for the case, reduction accomplished, and the fragments held in place by splints, our responsibility does not cease, for muscular contraction, decubitus, and movements of the patient must be constantly contended with. To meet these difficulties various splints have been devised, the efficiency of which depend upon 1st, extension; 2nd, adjustability; 3rd, comfort of the patient; 4th, ease of application; and 5th, the privileges which they allow for movements of the patient and his nursing.

To accomplish this I have devised the following apparatus in the form of fracture beds and splints, for certain fractures of the extremities, which has proven of considerable advantage, and in fractures involving the elbow, the "cornucopia cast," which I use routinely, has been of especial value on account of its being easily removed and replaced, allowing for early and repeated massage and passive motion of the joint. (See illustration.)

Time will not permit in this paper to give a detailed description of all this apparatus. However, the illustrations at this time will give a superficial idea of their use and application, and the X-rays demonstrate the results obtained. A detailed consideration of the various splints and apparatus will be found in subsequent papers.

The first illustration shows the author's fracture-bed and equipment for supporting a Bradford-frame, with extension attachments at head and foot, and Figures 2 and 3—attachments for raising and lowering same. The advantages in nursing cases that are confined in heavy casts are obvious.

Figures 4 and 5 show an adjustable aeroplane "splint" for fractures near the head of the humerus and Figures 6 and 7, the X-ray results.

For fractures of the shaft of the humerus, the modification of the Jones splint with the author's extension model (A) is well illustrated

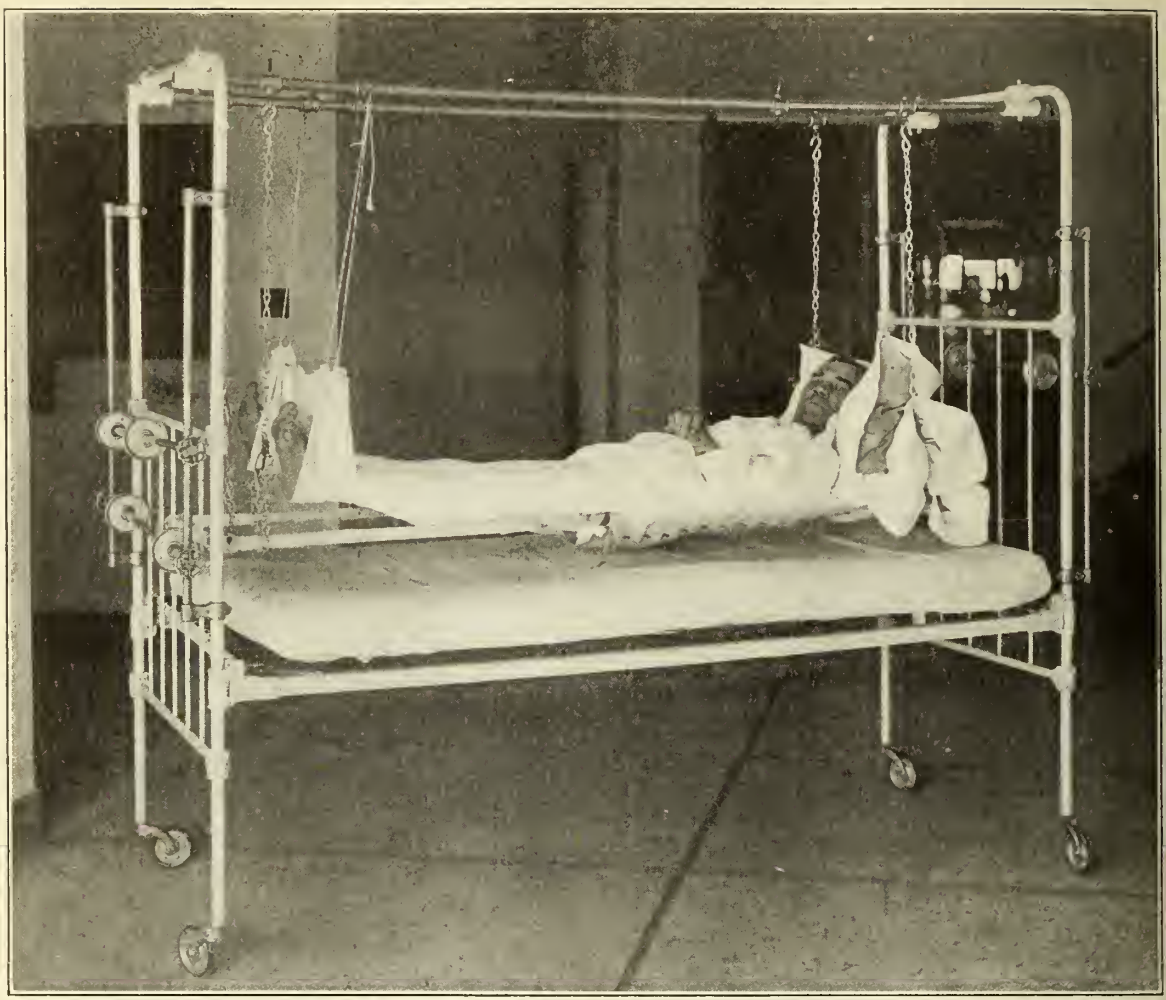


Fig. 1. Author's fracture bed, showing adjustable pulleys for extension counter-extension and permanent support of Bradford frame.

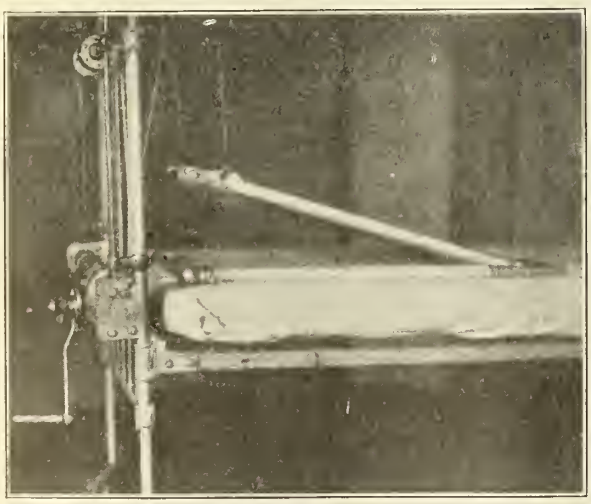


Fig. 2. Shows details of author's attachment for raising and lowering Bradford frame and, also, hinged back-rest and Bradford frame.

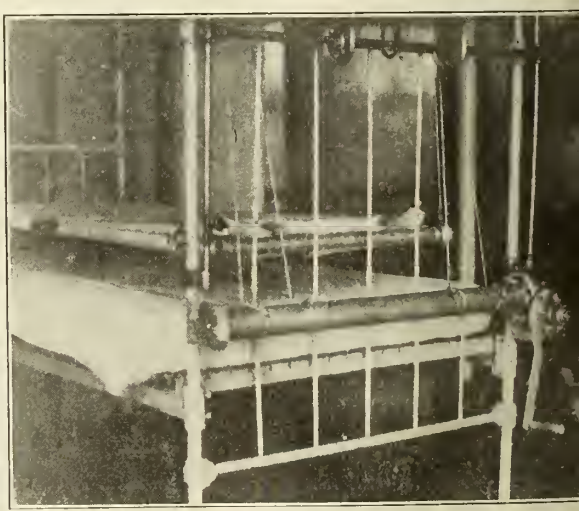


Fig. 3. Another view of attachment shown in Fig 2

Fig. 4. Author's adjustable "aeroplane splint" for fractures near the head of the humerus.

Fig. 5. Illustrating practical application of author's adjustable "aeroplane splint."

Fig 6. Shows deformity of surgical neck of humerus before application of "aeroplane splint."

in Figures 8 and 9, and X-ray results in Figure 10.

Figure 11 shows author's "cornucopia cast" applied to maintain acute flexion in fracture of lower end of humerus. The cast is lined with saddler's felt and is easily removed and reapplied. Figures 12-13 and 14 show clinical application and X-ray results.

Figures 15 and 16 illustrate author's adjustable leg-splint, combining some of the features of the Thomas and Hodgen splint with the marked advantage of adjustability. The side-bars may be straight or angulated. Figures 17 and 18 show author's leg-splint with straight and angulated side-bars, showing practical application of same with extension and elevation in author's fracture-bed.

Figures 19-20 and 21 are X-rays showing successive positions in a fracture of the thigh bone treated with above splint, the fragments gradually approaching coaptation through the effects of extension and immobilization.

Familiarity with any apparatus, as well as constant observation and readjustment of same, is necessary to success. Even an automobile should be guided around corners, and none are so efficient that they are entirely fool-proof.

Assuming that a positive indication is presented for the open method, what are the essential features to bear in mind and the course to pursue?

If the indication is for reduction only, and this being accomplished and no tendency to redisplacement occurs, the wound may be closed and proper fixation applied, but in the majority of fractures which require open reduction, some form of internal fixation is necessary.

Various internal methods, such as the use of metal plates, boneplates, metal bands, screws, wire, autogenous grafts and sutures with absorbable material have been advocated, and each method has its advantages and disadvantages. Without going into a detailed discussion, allow me, for the sake of brevity, to state my opinion regarding these various methods.

Regarding the Lane-plate, I believe it has rapidly lost favor with most surgeons who do much bone-work. I have removed many more plates than I have put in, and even many of those surgeons who still believe in their use

Fig. 7. Illustrating result of coaptation of fragments by application of "aeroplane splint" with extension.

Fig. 8. Author's adjustable splint (modification of Jones) for obtaining extension in fractures of the shaft of the humerus.

Fig. 9. Splint (shown in Fig. 8) assembled.

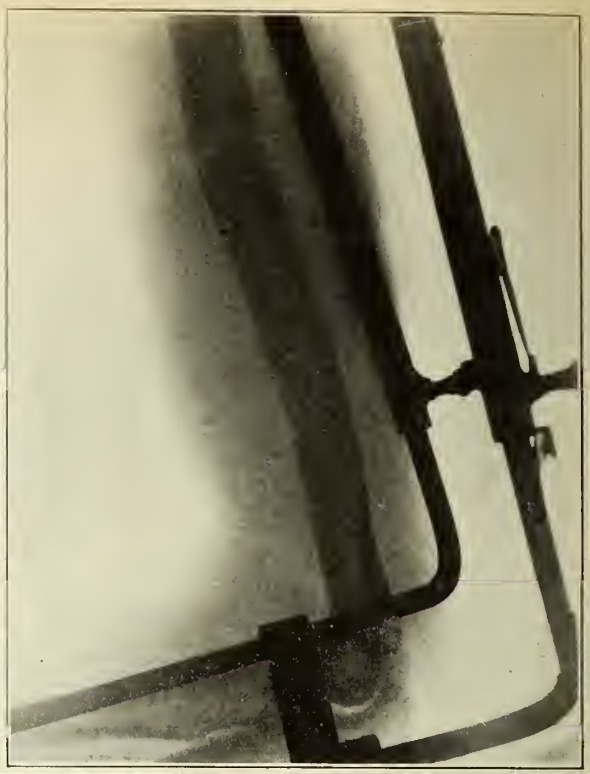


Fig. 10. X-ray illustration of fracture treated by splint shown in Figs. 8 and 9.

Fig. 11. Author's "cornucopia cast" for fractures of the elbow requiring the position of hyper-flexion.

Fig. 12. Application of "cornucopia cast" in a supercondyloid fracture of humerus.

Fig. 13.

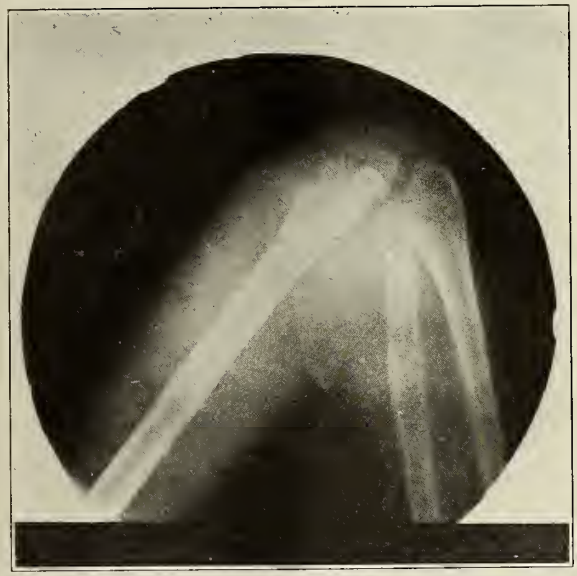


Fig. 14. Figs. 13 and 14 illustrate super-conduloid fracture before and after treatment by Hyperflexion in "cornucopia cast."

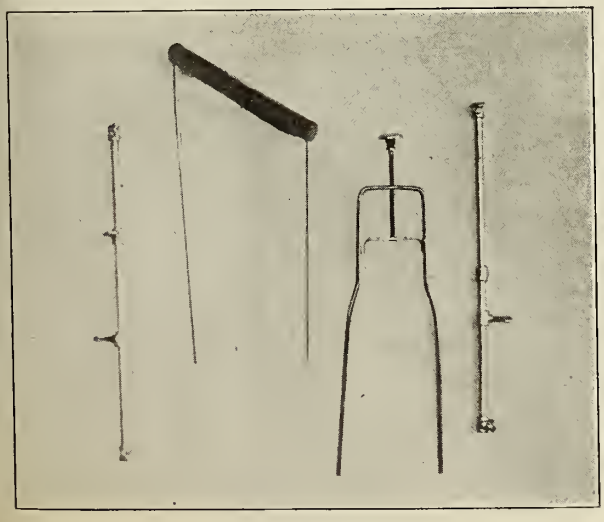


Fig. 15.

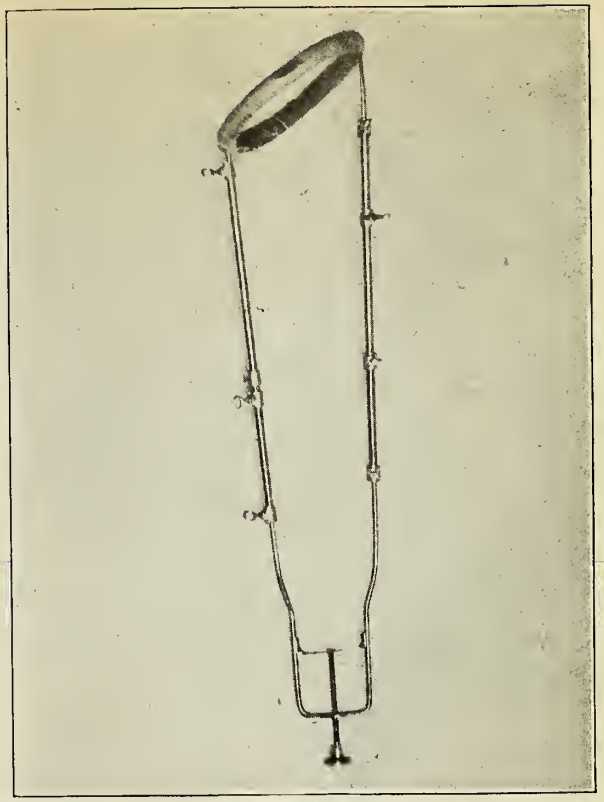


Fig. 16. Figs. 15 and 16 illustrate author's adjustable leg-splint for treatment of fracture of the shaft of the femur.

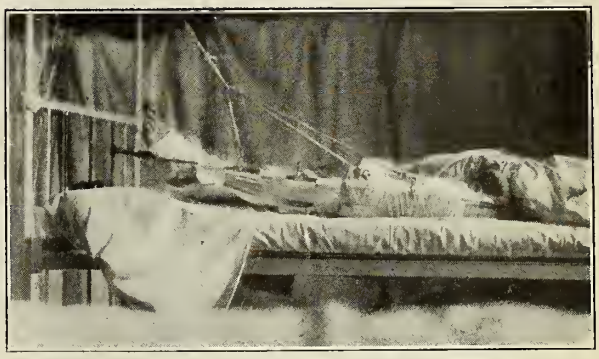


Fig. 17.

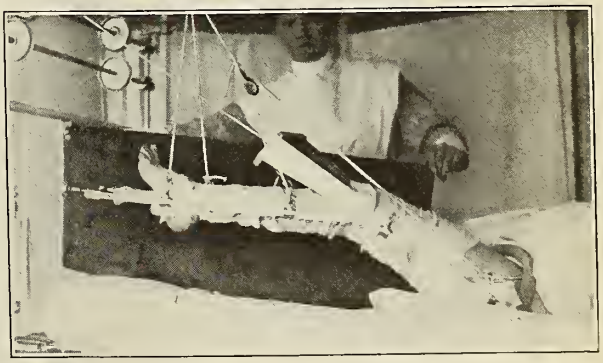


Fig. 18. Figs. 17 and 18. Author's legsplint with straight and angulated bars, showing practical application of same with extension and elevation in author's fracture-bed.

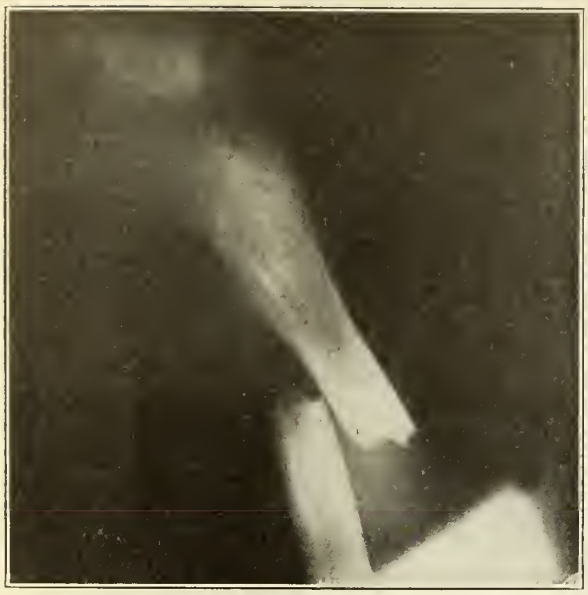


Fig. 19.

Fig. 20.

and apply them, advocate their routine removal. In only rare instances for temporary fixation would I recommend them. Certain cases may require screws or nails, but their indications are also limited, they being particularly adaptable to fractures of condyles and in comminuted fractures.

Fig. 21. Figs 19, 20 and 21 show successive positions in a fractured thigh bone treated with splint—the fragments approaching coaptation through the effects of extension and immobilization.

The bone-graft and the Parham band, in my experience, have been extremely useful, and it appears to me that the Parham band has not met with the favor which it deserves. Its main advantage is that it does not injure the bone; rarely, if ever, has to be removed, and, with the carrier, which I have devised, is easily put on. (See illustrations 22 and 23.)

The difficulty of holding sliding grafts of any dimension, and particularly in reconstruction work, by means of gut, kangaroo-tendon or bone-pegs, has been encountered by many surgeons, but by holding such a graft in place by two Parham bands, the results, in my experience, have been highly gratifying. (See illustration 24.)

In certain oblique fractures of the tibia, which are very troublesome, I have, during the last year, devised a method for applying an intramedullary graft to which, we, at the hospital, have applied the term "submarine graft."

The fracture having been reduced, and the

Fig. 22.

Fig. 23.

length of the graft determined, a graft is cut by using the twin-saw. (Fig. 26.) The graft is then shaped to size determined by a previous estimation on the size of the medullary cavity observed at the site of fracture, and then replaced in the upper fragment, (Fig. 27) and submerged into the medullary cavity and driven through the line of fracture into the distal fragment, the two fragments being held in a Lohman clamp. (Fig. 28.)

Figures 29 and 30 show X-ray results of

Fig. 24.

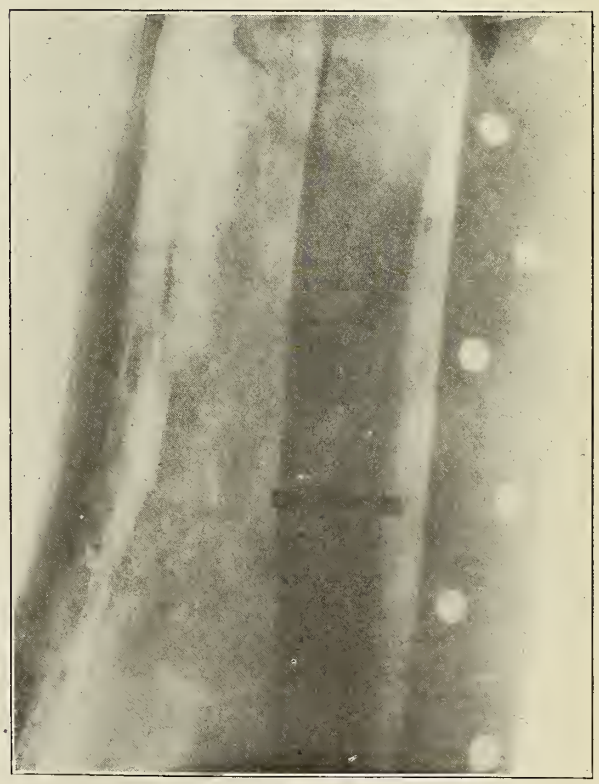


Fig. 25. Application of Farham band to long oblique fracture of femur. (The perforated metal band shows author's method of reinforcing plaster casts.)

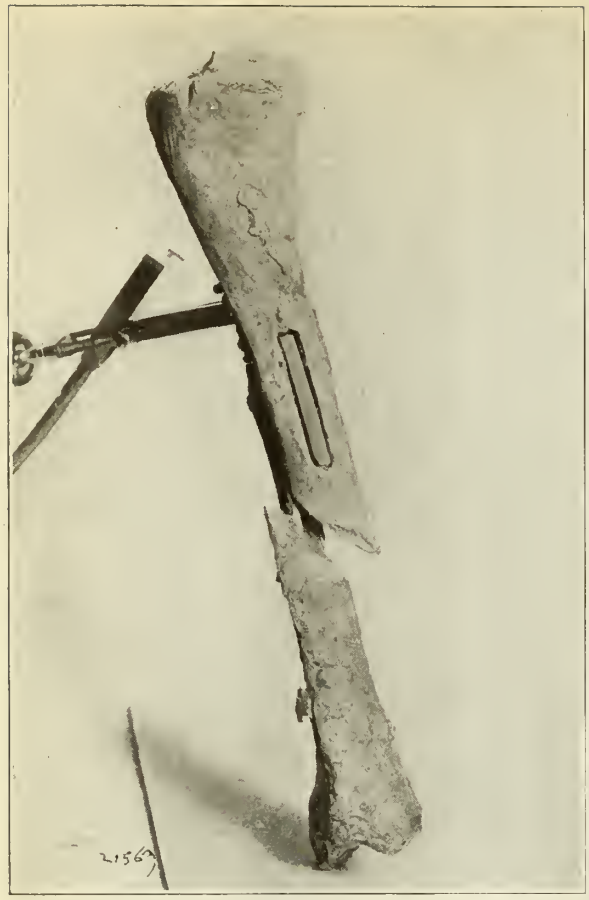


Fig. 26.

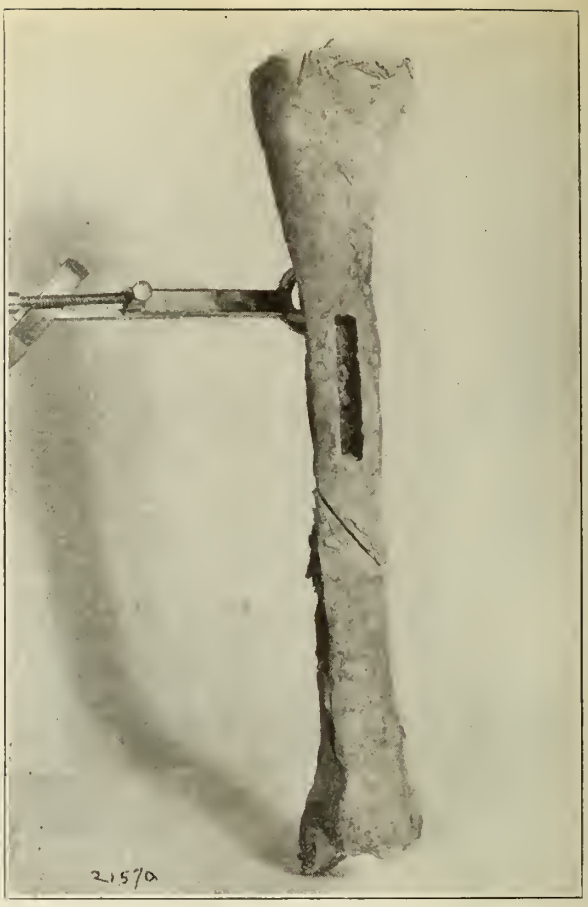


Fig. 28. Figs. 26, 27 and 28 illustrate successive steps in the author's "submarine graft" method for holding oblique fracture of the tibia.

Fig. 27.

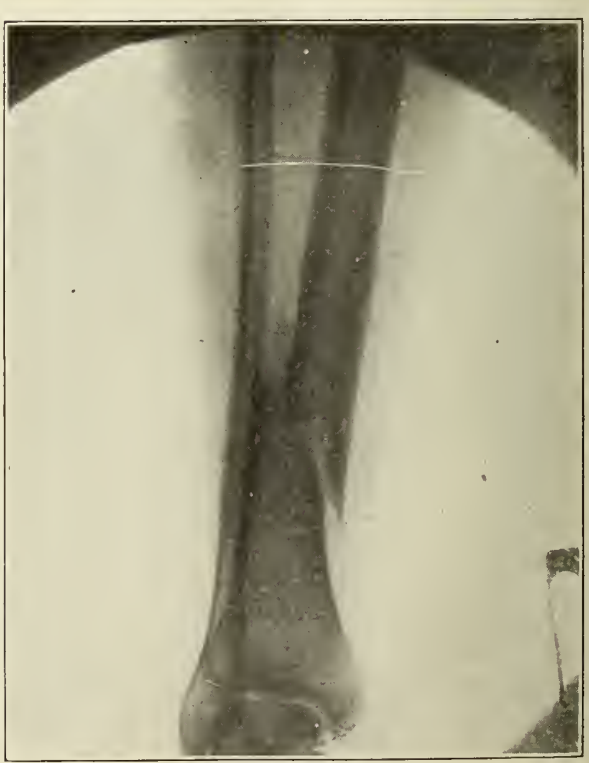


Fig. 29.

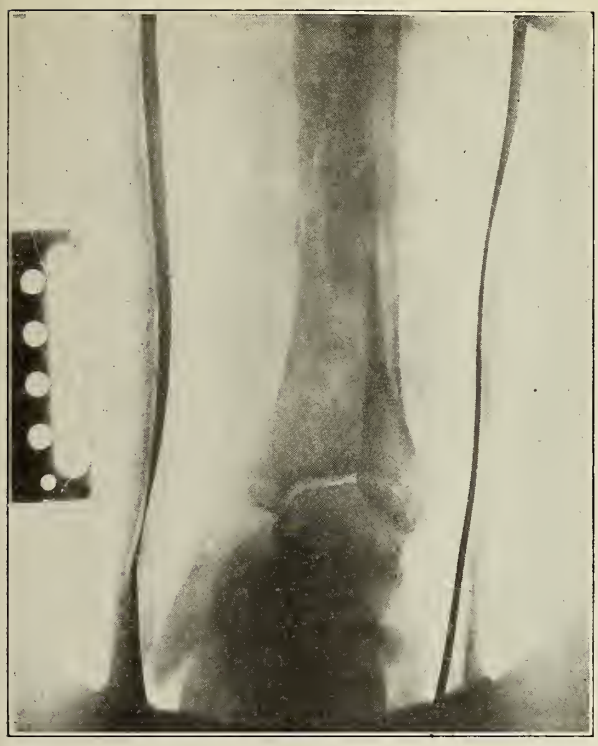


Fig. 30. Figs. 29 and 30 show X-ray results obtained by the "submarine graft" method in oblique fractures of tibia.

oblique fracture by author's "submarine graft method."

Further comments and reports will be submitted regarding this method, but in three cases, the clinical results have been apparently 100 per cent.

DISCUSSION ON THE PAPER OF DR. WILCOX

DR. JOHN P. LORD, Omaha, Nebraska: Mr. President and Members of the Association: Judging from what we have seen and heard it is very evident that the handling of fractures is becoming a specialty in itself. I sometimes sympathize with general practitioners when they see slipping from their grasp certain kinds of practice. I made the statement a few years ago that practitioners should recognize certain fractures as being of major importance, and that it is just as impracticable for a physician and surgeon, so-called, to handle a fracture of the thigh as it is for him to undertake to handle a major piece of abdominal surgery for which he has not been prepared and for which he is not fitted. The X-ray has emphasized this. The practitioner, whose practice is very general and whose experience in fractures must necessarily be rather limited is therefore becoming afraid to handle all the fracture cases that come along.

It is very apparent from the pictures of apparatus and equipment shown that a man to handle fractures to the best advantage to the patient must have a very decidedly large equipment. First of all, he must be a man with inherent mechanical ability within himself. A man who is not mechanically inclined could not use the apparatus that has been exhibited. I have the greatest admiration for the man who can drive out empty handed to a farmhouse and who, by ripping off a piece of siding from the house, or by the proper use of barrel staves, of scrap iron, or whatever he can find, can originate devices and apply them in such a way that he can get across with a good result. People who get a broken bone are so impatient to get medical or surgical help, that they pick up the first doctor that they can find, and the cases too frequently go into the hands of men who are unfitted to treat fractures. Many of the bad results have been the result of hasty treatment. I have been in the habit of telling medical students and practitioners that there is no particular hurry about setting a fracture. While it has been shown by fracture commissions that it is highly desirable to do so, and that these fractures had best be set and adjusted properly at the start, still fractures can go several hours, several days, and exceptionally a week or two without particular harm; the point was made a few years ago by Murphy, that he preferred to operate cases of extensive bone trauma involving important parts after the reaction and swelling had subsided and that it was better not to interfere until the first effect of the trauma had passed, that is, in the neighborhood of ten days or two weeks. We are all anxious to get the best results from the treatment of fractures, and if practitioners will go about the work with deliberation and not aspire to do too much they will get along better. It has been my observation in the last few years that this desire by some to do wonderful things in connection with fractures has resulted in a lot of harm.

I have spent a little time in discussions of recent years in asking the profession to get back to simple methods, and I have been emphasizing the point that has been emphasized here, that if the proper kind of patience is exercised in handling fractures a very small proportion of the cases will require the open treatment. It was my estimate that the small percentage requiring that intervention, was away down towards five per cent, depending upon the commercial skill and ability of the man to handle the case. There have been a good many faults that have crept into the treatment of fractures. When the furor for open treatment came along, operating surgeons went at it with avidity and operated nearly everything. Prior to that time they were wholly uninterested. The junior members of the staff, their assistants and interns handled fractures. Now the operating surgeons are beginning to let go again. They are not operating so frequently, and they often

wish some of these cases onto the orthopedist because he has the mechanical ability and is willing to take the time necessary.

In the past simple methods were proposed that have passed by without proper emphasis. I remember twenty years ago, possibly more, Wyeth brought out a drill with a detachable handle so that oblique fractures could be secured by the temporary introduction of drills to hold the fragments. There was not much attention given to it. It was not very satisfactory anyhow, for the reason that those who have tried to bore through the tibia with the ordinary hand drill got tired of it. They didn't like it. Codivilla emphasized the importance of this method but we have not paid much attention to it. Some years ago I sought to make the more general use of drills practicable and I had a series of sizes and lengths made of the ordinary steel wire with good diamond points. By using these in the ordinary mechanical drill, they could be put in quickly and readily. I had the temper taken out of the drills, except at the points, so they would not break. By putting these into a simple fracture and putting them at a tangent, you can splice them as a carpenter would a piece of wood. A window may be made in the plaster of Paris, or an interrupted plaster applied, so that, within ten days or two weeks these drills may be picked out readily, and you have left no foreign material. Thus you inflict a minimum amount of trauma, and they answer a very fine purpose in many cases. The introduction of foreign material is not desirable in the treatment of fractures, and by the use of proper mechanical methods, interrupted plaster loop splints, perhaps with screw adjustment, and with the use of some of these simpler devices, many of the fractures may be handled without resorting to the more formidable procedures.

DR. EMIL S. GEIST, Minneapolis: I believe that while a selected number of these cases will go to the specialist, the great majority of fractures will always have to be taken care of by the general practitioner whether the latter wants to do so or not. The papers of Dr. Henderson and Dr. Wilcox filled the requirements laid down by Dr. Mayo as being of genuine, practical interest to everybody attending a meeting of this kind. All of us ought to be specialists in greater or less degree in the treatment of fractures. So far as I have been able to observe, we do not see as many preventable deformities today as we formerly did. In other words, the treatment of fractures is improving.

Last night, we heard a lawyer cite instances of malpractice suits against doctors. Every case he mentioned was one of fracture. One lesson for us to draw from this is to have consultation with another practitioner in nearly every fracture case, no matter how simple it appears to be.

One joint has been overlooked. That is the shoulder. I think a great many stiff shoulders can be prevented if we bear in mind the importance of putting the shoulder in lateral elevation, no matter what the pathology. This is not a universal rule, but nearly so. As a matter of fact, this is hardly ever done, and the shoulder, after the original pathologic process has subsided, is stiff. It cannot be brought up in a sense of lateral elevation. If held in the position of abduction, the force of gravity will always tend to bring it down. As soon as we begin to use the position of lateral elevation in our shoulder cases (and, you will find, it is nearly always indicated), we will have fewer stiff shoulders to contend with.

DR. M. S. HENDERSON, Rochester: The paper of Dr. Wilcox is most interesting. Men doing orthopaedic surgery and those surgeons who are doing a great deal of fracture work, like Dr. Wilcox, have many cases referred to them with bad results so that the tendency is for them to take rather a pessimistic view and feel that the treatment of fractures in general is not what it should be. As a matter of fact, the large majority of fractures, as generally treated, give a very satisfactory result. The majority of fractures must of necessity be treated by general practitioners. Two fundamental principles to be remembered are to get the bone ends together, and secondly, to be sure that they are so placed together that there is no muscle between them. Also the fragments should be held in the proper weight bearing line. In a fracture of the femur, for instance, if the proper axis of the bone is not remembered, one is apt to get the bone ends together at an improper angle so that the weight bearing line would not be proper. The Thomas knee splint is a splendid aid for the treatment of fractures of the femur and should be more generally used. The pressure of the ring on the tuberosity of the ischium gives very firm extension, much more firm than you can obtain by any ordinary Buck's extension. Judging from the histories of many of these mal-united and ununited fractures, that I have taken, I would say that probably the chief cause of the condition is the delay in taking X-rays after the setting, and the surgeon thus fails to have positive evidence that his reduction has been incorrect and he thus lets go by the golden opportunity of resetting the fracture when the callous is soft.

DR. A. F. SCHMITT, Mankato: I have been very much interested in the papers presented by Dr. Wilcox and Dr. Henderson, and I desire to call attention to one fact which has been impressed upon me very forcibly in the treatment of some of these cases in the younger class of patients. I question seriously the practice of applying a metallic band to a growing bone. I will cite one instance, a child, nine years of age, where this method of treatment was adopted and uninterrupted recovery followed. The band was left on about a year. The parents were advised that it would be better if the band were removed. Arguments were advanced that the band was on a growing bone, and it was a fixed metallic band which inter-

fered with the growth of the bone. Finally urgent pressure was brought so that the child was subjected to an operation and the band removed, and it was found that there was a depression varying from one-sixth to one-eighth of an inch in the femur underneath the band which interfered with the growth of the bone, and the periosteum had not covered that band in that time. In an important bone like the femur such a band must necessarily mechanically produce a point of weakness, and if undue strain is put on the femur, it will break at that point. It interferes with the physiology of the bone, consequently while this treatment may be practical and may be good surgery in the adult, in a child I question whether it is good treatment in a growing bone. The same result of maintaining apposition may be obtained by the use of absorbable ligatures. One can drill through the proximal fragment and also through the distal fragment horizontally and vertically, using double ligatures of kangaroo tendon or chromic gut, whichever you prefer. I usually drill above and below horizontally and have the lower and upper drill almost vertically; then tie the lower proximal ligature to the upper distal ligature, and then tie the upper ligature to the lower proximal ligature on each side. If you use three ligatures, you do the same above, which makes it impossible for the fragment to be displaced when reinforced by the proper application of the cast, and a secondary operation is not needed to remove the band on the growing bone.

DR. WILCOX (closing).—The subject is so large that we could discuss it indefinitely. There have been many points brought out in the discussion, and I appreciate greatly the kind consideration of my paper.

STUDIES IN INFLUENZA*

By Edward C. Rosenow, M. D.,
Rochester, Minnesota

When influenza appeared the last time it became apparent to every one that the infection differed markedly from the types of infection we have considered grip and influenza infections that occur commonly at certain periods of the year, almost every year. The intense cyanosis, dyspnea, the extreme prostration and marked leukopenia are clinical signs so pronounced that all of us, I am sure, have vivid recollections of them. The tendency to acute hemorrhagic edema with bloody expectoration, the great tendency to massive involvement of the lung, and the huge size of the lung as found by pathologists after death, constitute a clinical picture that all of us will agree to.

Just as the clinical picture was peculiar, so the bacteriological findings in these cases were found to be peculiar. The sputum during life from the very onset of the disease contained unusual numbers of green producing streptococci which differed from the normal streptococcus viridans flora that individuals harbor. The colonies were larger; they were more moist; they would spread over the media of blood agar plates and tended to produce more green than the ordinary streptococcus viridans. The influenza bacillus was found present in the middle of the epidemic in considerable numbers in many cases, and in some instances in large numbers.

The findings in cases of acute deaths were also peculiar. The blood during life usually was found to be sterile by ordinary blood culture methods. The blood after death was often found sterile and the number of microorganisms in the lung exudate compared with what is present in the cases of lobar pneumonia was relatively few.

It was thought that injections of sputum directly or other material from the secretions of cases of influenza might throw considerable light on the etiological agent, or it might be possible in this way to determine which series of organisms are constantly present, with the green producing streptococcus predominating. It was thought that injections of the sputum in animals might determine which of these series of organisms were the virulent ones, and which would tend to cause death in animals. This was done, and it was found that animals would die within twenty-four or forty-eight hours from intraperitoneal injections of a very small amount of sputum of virulent infection, and nearly always death was associated with this form of green producing streptococcus, unlike most of the cultures of the streptococcus hemolyticus, the green producing organism and influenza bacillus, and when the animal died, it died apparently from invasion by this type of green producing streptococcus with this peculiarity. When pneumococci are injected intraperitoneally in different animals, they die from pneumococcemia. Their blood is riddled with microoraganisms that contain countless

*Read before the Southern Minnesota Medical Association at Rochester, June 23-24, 1919.

numbers of colonies when plated out. In these cases the animal would die of peritonitis, not usually serofibrinous, more often hemorrhagic, and the number of microorganisms in the animal's blood after death was small as compared with the number of pneumococci, and generally after this observation, it was found if these organisms were injected intraperitoneally they would produce a hemorrhage, edema of the lung, and bronchopneumonia, a striking coincidence.

I wish to show you a few of these peculiarities by means of lantern slides. (Here Dr. Rosenow showed a series of lantern slides and pointed out the peculiarities previously referred to.)

I will now give you a summary of the analysis of persons admitted to the various hospitals with undoubted cases of influenza. All doubtful cases have been excluded. These cases have been studied accurately. We have among this group 59 persons who were vaccinated once. Of this number 24 were vaccinated three times during their stay in the hospital, with a mortality of 5 per cent as compared with 60 that were unvaccinated, with a mortality of 22 per cent. In other words, that figure runs through in all tables we have gotten from various sources. Deaths from pneumonia from any cause are usually one-fifth greater among the unvaccinated than among the vaccinated. We have had 99 women who took the vaccine during pregnancy, and the mortality rate among the vaccinated was 12 per cent as compared with 20 per cent among the unvaccinated.

As a result of our study of the sputum or exudates after death, we can say without any hesitancy that in influenza there is present almost always a green producing streptococcus which has apparently specific relationships. This monovalent serum has the power of agglutinating practically all of the strains. One strain will absorb the agglutinins for practically all, and with a vaccine containing a high percentage of these strains, adding this peculiar apparent relationship together with the other streptococci, streptococcus hemolyticus and staphylococci that are commonly associated with this disease at the time of death, it is possible to rob influenza of some of its terrors.

GRADENIGO'S SYNDROME AS A LATE COMPLICATION FOLLOWING MASTOIDECTOMY

WITH REPORT OF CASE

By Arthur Edward Smith, M.D.

Oculist and Aurist to St. Andrew's Hospital and to the Minneapolis City Hospital

Minneapolis, Minn.

Dr. John M. Wheeler of New York presented before the Section on Ophthalmology of the American Medical Association at Chicago last June, a very interesting and instructive paper on "Paralysis of the Sixth Cranial Nerve associated with Otitus Media."

In this he calls attention to the inadequate recognition, in text-books of ophthalmology, of the role of affections of the middle ear in isolated paralyses of the abducens and gives a clear-cut and illuminating exposition of the pathology of the condition, based primarily on a study of the relational anatomy.

The syndrome or triad of symptoms first described by Gradenigo at the Congress at Bordeaux in 1904, is characterized by—

(1) Acute otitis media (with or without mastoid involvement).

(2) Isolated paralysis (partial or complete) of the abducens nerve of the side corresponding to the diseased ear.

(3) Intense and very persistent pain, localized not in the mastoid but in the frontal, temporal and parietal region of the affected side.

As would naturally be expected, this syndrome has been observed, for the most part, in cases of otitis media or mastoiditis in which drainage of the tympanic cavity or mastoid cells has not, as yet, been secured; usually clearing up in anywhere from a few days to several months after paracentesis or mastoidectomy has been performed. In a few cases it has been observed shortly after the mastoid operation has been performed, particularly when an eburnated bone has necessitated unusually heavy malleting.

The following case is reported as being of

interest because of the very unusual time of the development of the symptoms.

D. G.—aged ten years—one of a family of four children all of whom were taken ill with scarlet fever. The disease, from the first, was much more severe in her case than in that of the other children. She complained of pain in the ears on the fifth or sixth day; the pain was more severe and persistent in the right ear. Purulent discharge from both ears noted on the fourth day after the onset of the pain. The hearing was profoundly affected from the first. Attending physician made a diagnosis of mastoiditis (right ear) on the thirtieth day of the otitis and advised operation but was unable to get the consent of the family until four days later. By this time there was a large subperiosteal abscess and the pus had broken through into the digastric fossa forming a typical Bezolds abscess. The mastoid was of the pneumatic type and, as would be expected in a case in which operation had been so long delayed, there was a very extensive involvement of the cells particularly those running forward into the zygoma. I removed the mastoid tip and made a counter opening in the neck evacuating a large quantity of pus. Recovery was slow but uneventful the patient remaining in the hospital five weeks. She had been discharged from the hospital and was being brought to the office (principally for treatment of the other ear which was still discharging), when one day (eight weeks after operation) the mother called me on the telephone telling me that the child had suddenly become cross-eyed. Examination revealed a complete paralysis of the right external rectus. No other muscles were involved. Patients said that she had some headache on the right side but that it was not severe. The mastoid wound had healed and there was very little discharge from the ear. Under the circumstances it seemd hardly advisable to reopen the mastoid and the case was treated expectantly. Eight days afterward the external rectus had regained some of its function and the headaches had entirely subsided. Eleven days after this, (three weeks after the onset of the symptoms) the function was entirely restored and the rotations of the eye normal.

A NEW NEEDLE FOR THE INTRAVENOUS ADMINISTRATION OF ANTI-LUETIC MEDICATION BY THE LONGITUDINAL SINUS, GIVEN IN CHILDREN*

By T. L. BIRNBERG, M. D.,
St. Paul, Minn.

The treatment of congenital lues is still an open subject as shown by the fact of the many articles by different observers written every year. In fact, we are not as yet able to state when a case is cured. Evidence is sufficient to warrant the belief that many cases are cured, because of those cases known to be reinfected. Yet with our knowledge of the activity and inactivity of the disease, of its latency in an individual for months and years, we must bear in mind the possibility of the cases of re-infection as occurring in those individuals in whom the disease may have been latent and in whom there are no reactive bodies in the free circulation to meet the invasion of the spirochaeta pallida and thereby prevent the infection.

At least we have means by which the disease may be controlled and held in abeyance, and possibly, though unproven, cured. For convenience, the treatment of lues in relation to the baby can be included under the following headings:

1. Treatment of parents till cured.
2. Treatment of pregnant mothers.
3. Treatment of nursing mothers.
4. Treatment of the child.

In the first group we mean all individuals infected with lues. Because they are potential fathers and mothers. The diagnosis must be made early and the treatment be pushed hard before the spirochaetae become encapsulated in infiltrated or fibrous organized areas. No individual is considered apparently cured till observation over prolonged period shows the Wassermann in the blood and spinal fluid both negative. Second: If the pregnant mother is luetic, she should receive prompt treatment so that her offspring will be carried to term and born free from disease, the fetus probably deriving benefit from the antitoxin of the mother.

*Read before the Ramsey County Medical Society, Jan. 27, 1919.

the influence of the drug on the mother, and, consequently, a promotion of resistance of the fetus against this disease. Third: The nursing mother practically always being luetic should receive treatment, thereby helping the offspring by the antitoxin through the milk and by improving her milk supply; nowhere else is breast feeding so beneficial as for a luetic child. Fourth: In the treatment of the luetic baby we must bear in mind that we are dealing with a condition having a high mortality rate, especially in the first six months and must begin our treatment early and push it rapidly if we expect our ultimate result to be a child of apparently normal appearance. The death rate in the Foundling Home in Moscow is 70 per cent in the first six months alone. Others report a death rate of 50 per cent to 80 per cent. All, however, agree to the high death rate in the first six months. These figures are, however, rapidly undergoing a change for the better, owing to the improvement in the treatment of these cases. In private practice the death rate is considered much lower than in institutional practice.

Experience has shown that these patients should be kept out of institutions as much as possible, except for diagnosis and initial therapeusis. The reason for this is that these children are below par and are very susceptible to parental infections especially to the "grippal infections." We should insist on breast feeding on account of the lowered tolerance of these children and the value of breast milk itself as mentioned before.

The drugs employed in the treatment of lues are mercury, arsenic and iodine. The mercurcals mostly used are calomel, mercury ointment, gray powder, biniodide of mercury and bichloride of mercury. The arsenical preparations are salvarsan and neosalvarsan and the iodide preparations are sodium and potassium, also, syr. iodide of iron.

As soon as the diagnosis is made the treatment of both mother and child begins. We use both the mercury and salvarsan treatment; using both mercury by mouth and by skin; choosing for skin therapy either mercury ointment or mercury plaster and by mouth a preparation of mercury which seems unfortunately but little used; hydrargyrum oxidulatum tannicum. The reason for choosing this preparation is that most luetic children are predisposed to loose stools and also most of the other mercurials taken by mouth are laxative in character. Therefore, I think it fortunate that we have one mercurial that is constipating in its action.

Our routine is as follows:

A plaster of mercury 6 by 6 c.m. is applied and changed every eight days till ten plasters are used. The locations chosen are the abdomen, chest and back; the location is changed each time. During this period, mercury is given in the form of powdered hydrargyrum oxidulatum tannicum .01 gm. T.I.D. This is combined with the salvarsan treatment. We prefer the neosalvarsan or similar preparations on account of convenience in administration, using the intravenous route on account of dangers of the subcutaneous and intramuscular methods.

The dosage is 0.015 neosalvarsan per kilo of body weight of the child for each dose. This treatment is repeated two more times (total three doses) at intervals of ten days.

After a course of mercurial and salvarsan treatment we are accustomed to wait six months and make a Wassermann. If this is positive, repeat this course of treatment and keep on taking a blood test every six months until the Wassermann remains negative. Experience has taught us that a permanent negative Wassermann is much harder to get in congenital lues than in the acquired type of the disease.

The intravenous route in the use of salvarsan has in the past presented many difficulties due to the fact that suitable veins are hard to find in an infant. The veins of the elbow, as used in the adult, are unsatisfactory on account of their depth and the amount of fat present; therefore, the veins of the scalp which fortunately are prominent in a luetic child are advised. However, these veins are small and very fragile, occasionally causing leakage in the tissues of the scalp with the danger of slough. The external jugular may be used. But this is not always suitable in all cases.

During the last two years we have been using the superior longitudinal sinus as our route for the administration of salvarsan. This

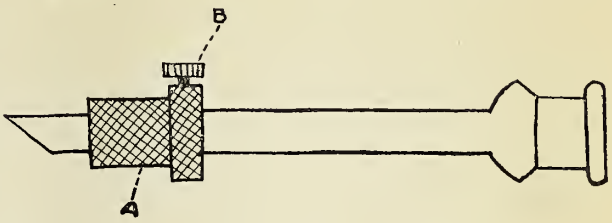
vein is valuable because it is large,—has thick walls, is rather uniform in its location, is not movable and is easily accessible. We use a 20 c.c. Luer syringe with an 18-20 needle, choosing as our site of puncture the sagital suture just back of the posterior apex of the anterior frontal. This region is chosen because the vein becomes larger in caliber as it progresses posteriorly and this is the most posterior accessible position.

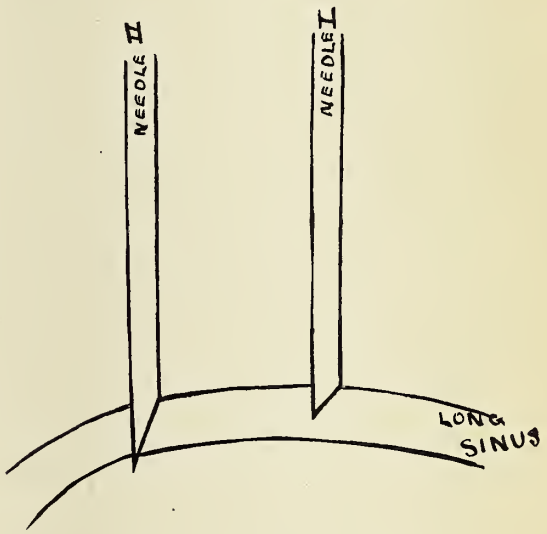
Due to the danger of transfixing the sinus and the consequent danger of leakage of salvarsan within the subdural space, we have prepared a special needle for this purpose. (Chart 1).

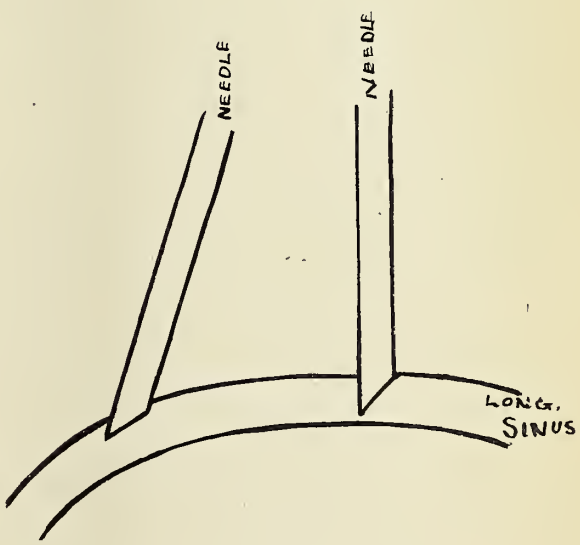
This is simply a 18-20 gauge needle upon which is mounted a sliding bronze sleeve "A" which can be set at any distance from the point of the needle by means of the set screw "B". On measure the length of the bevel of the point of the average needle was found to vary from 4-32 to 6-32 of an inch, and as the diameter of the sinus at this point was from 3-32 to 5-32 of an inch (Brown & Smith) we can see the necessity (Chart 2) of making a needle with a bevel of 45 degrees to avoid transfixing the sinus. Also, much more room is obtained if the needle is inserted with the bevel parallel to the surface of the scalp. (Chart 3).

A flat, circular or concave plate might suggest itself as a substitute for the bronze sleeve but the disadvantage of a plate is that any lateral movement of the needle would by lever action tend to pull the point in and out of the sinus. Moreover, a plate would entirely prevent the introduction of the needle with the bevel parallel with the surface as suggested above.

After using this needle for two years we find it impossible to cause any injury to the longitudinal sinus by intravenous medication even when the syringe must be changed, as in transfusion, etc. We have also used this needle in intravenous medication, administration of diphtheria antitoxin and especially is it valuable in obtaining blood for Wassermann and blood cultures.







PROGRAM OF THE STATE BOARD OF HEALTH FOR CONTROL OF VENEREAL DISEASES AND WHAT RESULTS MAY BE EXPECTED

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Under ordinary conditions, a program for control of venereal diseases should be developed gradually and an effort made to carry the public and profession along with you a step at a time. In this way several years might well be used in putting an entire program into force. If this were being done we should place diagnostic and treatment facilities first, at the same time carrying on the educational propaganda, for the entire program. Legal matters would be the last to receive consideration. But these are war times and we must get the quickest action possible. Consequently, we must adopt and attempt to put into practice the entire program at one time. In order to do this we must first of all have law. In practically all of the states this can be arranged by rules and regulations of the State Board of Health. For the most part, the Western Australia law has served as a model and many states have copied it almost verbatim. If the Board of Health is to assume control over patients in anyway whatsoever, all cases must be reported. Reports of course, to be confidential and preferably direct to the State Board of Health. It would be extremely disagreeable in many cases in small communities for physicians to report to local health officers and besides many times a patient is being treated and would be reported in a different community than his residence. Consequently, the local health officer where the case was reported, would have no jurisdiction. If the reporting of name is not required in all cases the physician should only report by serial number, providing, he assumes the responsibility for that particular case insofar as spreading the infection may be concerned. In any case, if the patient does not remain under treatment, or so conducts himself as to endanger others, his name, and address should immediately be required. Provision should be made for the patient having the privilege of changing physicians without being regarded as having stopped treatment. Guardians or parents should be made responsible for treatment of minors.

If possible, treatment should be permitted only by qualified practitioners. This would tend to eliminate osteopaths, chiropractors, christian scientists, and possibly some quacks and druggists.

The sale of nostrums and other remedies for gonorrhoea and syphilis by druggists must be stopped. Such a law is very much to be desired, as at least 50 per cent of dispensary cases of gonorrhoea go to druggists first, and lose considerable time and a valuable opportunity for successful treatment.

The Board of Health should have adequate power to examine suspected persons. This should include prostitutes and all those arrested for crimes involving moral turpitude and all prisoners and other institutional inmates. It should also have full power of quarantine to be used whenever deemed necessary. Exposing another person to gonorrhoea or syphilis should be made a misdemeanor. Freedom from venereal disease should be one of the conditions placed upon securing a marriage license.

Flexner has stated that a rainy night had more effect upon reducing venereal disease than any efforts at medical regulation of prostitution. This statement hinges upon the making of prostitutes inaccessible. Believing his observation to be proven true, I think that the next important step in our program should be the securing of rigid law enforcement as regards prostitution. I believe that the putting into effect of law enforcement in a community which has been lax, will very rapidly reduce exposures and infections by at least one-half. This statement is practically proven by army statistics which were collected in San Francisco at the time such a program was put into effect. This will receive further comment in the second portion of this paper. Most communities will have sufficient laws or ordinances to cover this work, but we need to educate the police departments and courts to the needs of this action from the public health standpoint. An energetic and continuous drive should be made by the police departments against all phases of prostitution, including any segregated district, open houses, rooming houses, cheap hotels and street walking. Such persons when arrested should preferably

be held under quarantine as having had contact with a communicable disease, instead of being permitted to secure bail under a charge of vagrancy or disorderly conduct. This not only insures the opportunity for proper physical examination, but also does away with any question of bailbond sharks. Agreement should be had with police or municipal judges to continue all cases until a physical examination is made. If a person is found diseased by the health authorities, necessary isolation or quarantine and treatment should be instituted. If they are not found diseased, arrangements should be made with the courts for drastic jail sentences; fines and suspended sentences should not be tolerated, unless recommended, after proper investigation by the probation officer. This is absolutely necessary in order to get proper repressive effect to reduce prostitution to the minimum required by the War Department.

In caring for this class of patients we must recognize the fact that they are not necessarily hospital patients but what is needed is a proper place of detention where expert medical care can be given. We must recognize the fact that many of these cases will finally be detained over a period of several weeks or months and this is decidedly an impractical thing so far as straight hospital wards are concerned. Therefore, the need for a place of detention, which is neither a hospital nor a jail, becomes at once apparent and very few communities in this country at the present time are furnishing such a place. Inasmuch, as inmates of our city and county jails are essentially a class of people likely to be infected and the surveys already made indicate not less than 50 per cent are infected, the opportunity should be seized to make examinations and institute treatment of all persons confined in these jails, extending if necessary by quarantine, the time beyond the expiration of their sentence. City and county jails are mentioned particularly as they are more frequently without a medical staff, whereas, state prisons are usually more adequately equipped.

In this part of the program the social service work is of very great importance. It would be within the province of the social service department to see that all prostitutes are carefully examined mentally; in order that the feeble-minded may be registered and properly provided for. Careful sociological investigations should be made and this record furnished the court to assist it in determining the sentences. Proper follow-up of cases should be instituted after the period of quarantine has expired. In connection with this work a very great responsibility rests upon the social service department, the educating of the community to the need of proper detention homes for both juvenile and adult delinquents and to the need of adequate quarters for the feeble-minded. In dealing with a large group of hardened offenders, the need also of a state reformatory for women and a law which will permit of rather long time, indeterminate sentences to such reformatories will be made apparent. It will not be possible in a few weeks or months to get such persons physically well, out of vicious habits and trained in some vocation by which a legitimate living can be made but it will be possible with an indeterminate sentence in a proper reformatory, in the course of two or three years to get a large percentage at least of such people into condition where they could be placed at work under careful supervision or probation.

In connection with this work, as well as with the step which is to follow, there must be furnished free laboratory service including Wassermann tests, gonorrhoeal fixation tests and microscopic examinations of smears. In the past, many hospitals financed entirely by public funds have seen fit to refuse cases of gonorrhoea and syphilis as such although their wards may be filled with the end results of both of these diseases. Every such institution should admit these cases under exactly the same conditions as other patients. There is a need for greater dispensary facilities and in order that good results may be attained these clinics should be made to meet certain standards. They should be in charge of an efficient staff, sufficient room and equipment should be supplied, nurses and proper social service workers are indispensable. In many places there is a need for an evening clinic where people who are at work can get good treatment at a nominal fee. Such a clinic might well be undertaken by local boards of health, at least an advisory clinic should be maintained by the health department where a diagnosis could be made and the patient properly directed for treatment.

We have purposely left the educational field to the last, not because it is the least important, but because it will be much more time consuming and slower of effect upon reducing venereal diseases than the rest of the work. It should be the prime duty of this department to spread a knowledge of venereal diseases and of the state's program for their control. This should be done by proper newspaper publicity, lectures, pamphlets, exhibits, etc. Lectures should be given to groups of employers and employes, to various men's and women's organizations and to the medical societies. A full line of pamphlets should be issued on sex hygiene. A pamphlet on treatment should be furnished to physicians as well as one containing information and instructions to be given to patients. Placards for use in public comfort stations and other suitable places should be arranged for. Reference should be made on these to local dispensaries and advisory clinics. A carefully planned exhibit and a stereomotorgraph equipped with proper slides will also be very valuable. A definite educational campaign should be waged against quacks and fakers.

The next step in the educational work is directed toward those who in their turn will be teachers and is not limited in its scope entirely to venereal diseases. Courses should be arranged for in every state university and in all normal schools. These courses should cover the biology and psychology of sex, sociology, sex hygiene and venereal diseases. Courses should be given in medical schools with particular reference to the public health side of the problem. Courses should be given to hospital, public health and school nurses. Under the educational department a course of study on sex education should be planned for parents' and teachers' associations. Communities should be stimulated to the further use of present recreational facilities, the need and the part this work plays in stimulating a normal sex life in the young should be emphasized. This is one of the very great needs in rural communities.

We believe that one important detail of the educational work should be, giving people to understand that something can be done if exposure has already taken place. This may be called early treatment or prophylaxis, as you will. Its value has been fully demonstrated by the army, of that there can be no question, but there is the question as to how this information should be given. We personally believe that no wide-spread publicity of it should be given, nor should there be any question of going to the extreme of suggesting the sale of a prophylactic package. It should be a proper function for the dispensary or hospital in dealing with individual patients to give out this information.

A well-rounded program for combating venereal diseases must take cognizance of every factor which enters into their spread. Just why almost every physician who takes up the discussion of the problem should preface his remarks with the statement that we should be concerned with it only as a medical problem and not with morals is not quite plain to us. Surely all of us must recognize that at the bottom it is much more of a moral question than anything else. If we could at once do away with sex immorality the days of venereal diseases would be numbered. We know that an attack only from the medical side must fail, just as it has always failed in attempted regulation of prostitution. We cannot do away with venereal diseases until we prevent exposures, we must preach continence using the disease as an argument if you will. Let us do everything that medical science says is good, but let us not hesitate as physicians and as a profession, to declare ourselves on the moral issues as well.

Before the war we had but small reason to predict an early and general success to the efforts of those workers who since Prince Morrow's day have struggled to eliminate prostitution and venereal disease from our community life. The problem was so ancient, attempts in the past had proved so sporadic and local that the majority of men and women were inclined to consider any new solution proffered as purely academic and theoretical.

Our hopes, if we had any, were based more on the optimism of our temperaments than our actual experience. That was before the war, before the Government had placed its hands on our railroads, our food, our luxuries, our vice. Today after but a few months time we have actual facts upon which we may build our hopes. There is no longer any excuse for cynical distrust. All who run may read.

Today then, we base our expectations for Minnesota on what has been actually accomplished here or elsewhere, and we ask the cooperation of the medical faculty in this work of attacking venereal diseases, with the same confidence with which we should ask it if yellow fever threatened our state.

I. We may expect to reduce venereal diseases by reducing commercialized prostitution to a vanishing point.

(a) Active law enforcement does not make men and women moral but it can and does make the prostitute inaccessible, thereby causing an immediate falling off of venereal diseases. (It is agreed that the average prostitute infects from 10 to 20 men nightly.) A dramatic proof of this contention was offered early in the California campaign. In the first place, the problem was rapidly reduced as shown by the fact that in October, before the work started, nearly four hundred women were brought into court on charges of moral turpitude; soliciting on the streets was rampant. November first, arrangements were made for jail sentences in all cases with quarantine and treatment of those found diseased. During November, only about one hundred and fifty appeared in court and the streets were clean. The number continued to decrease until February, when less than one hundred were arrested.

The effect on exposures and infections is shown by the following table taken from the army figures at camps around San Francisco.

MONTH	Mean Strength of Command	Venereal Diseases. New Cases	Exposures Represented by Prophylactic Treatments
October	13,813	193	951
November	16,138	101	669
December	17,532	124	623
January	18,068	61	378
February	17,315	86	478

Here it is seen that in the first month exposures which may be represented by prophylactic treatments, were reduced nearly three hundred while infections were practically cut in two, and this in spite of the fact that the strength of command shows an increase of nearly 3,000. As time went on, many other elements undoubtedly entered into the reduction but there was apparently no other explanation for this rapid reduction taking place immediately following law enforcement. Another point to be emphasized in the table is that in February the same judge was on the bench as in October and he was the one of the four who rotated in his court who was most reluctant in agreeing to the Government's demands. Consequently, we see during his month an increase in exposures and a corresponding increase in infections. This table apparently demonstrates that to a certain extent, exposures and infections follow the enforcement or non-enforcement of law.

Nearer home, we have the experience at Fort Snelling to corroborate our view. As soon as the program of the bureau of venereal diseases went into effect, the number of new cases at the Fort was immediately reduced to 50 per cent of what it had been for the previous six months; and at no time since has it exceeded this low figure.

(b) The doing away with the fine system for prostitutes, taken into court, and replacing it with workhouse sentences; the physical examination of all men and women arrested for sex offenses, together with enforced treatment and quarantine of infected individuals, has, despite politics, proved to be an entirely practical, as well as an essential second to the policy of police repression. Judges for the most part, are willing to be educated and have been converted to the plan with surprising alacrity. It is the court attitude which goes far in the discouragement of prostitution as a profitable trade. Upon going into effect in California, it made an appreciable difference at once in the number of prostitutes who remained within the state. Four months ago there were four women in the workhouse in St. Paul. The number dwindled down to one woman and at present there are 15 inmates. The highest number since the campaign to control venereal disease started was 22 on June 16th. This increased number represents cases, which under the old conditions would have been permitted at large.

That the state has power to keep infectious cases after the term of sentence has expired was recently shown when by a habaes corpus proceeding, an attempt was made to remove an infectious girl from the Minneapolis workhouse when she had served her term. The court sustained without hesitation, the action of the State Board of Health. Again, in St. Paul, it was

demonstrated that the courts have little intention of recognizing sex distinctions. A certain taxicab driver, when told to report for treatment, attempted to evade the order by leaving the state for a month. Upon his return, however, he was immediately hailed into court, ordered to resume treatment and placed on probation.

With the aim to determine how many workhouse inmates were diseased a medical examination at the Minneapolis workhouse was made and showed the following results:

Number of men examined, 145. 50 men gave positive Wassermann reaction; 7 had positive smears, 2 were positive for both. 8 slides negative but clinical findings positive; 55 diseased.

Of 43 women examined, 19 gave positive Wassermann reaction, 14 positive G. C.; 6 both; 27 diseased.

(c) To prevent the "coming back" of the prostitute, more than law and medicine is necessary. She must first be classified psychologically to determine the possibility of her rehabilitation. Those found mentally incapable of maintaining a legitimate standard of living must be permanently segregated. In such psychological examination of 30 women conducted recently in California at the Mission Valley Hospital, San Diego, 10 were found definitely defective; 10 were border-line cases; 10 were normal. 10 of these 30 therefore, would in all probability, inevitably come to the care of the state. Already efforts are under way in California to provide permanent state care for such women. As for the other 20, 10 can doubtless with the aid of adequate social service agencies, be restored to normal life; 10 may, by means of careful vocational study be taught to earn a living but will doubtless require considerable moral support and watching, at least until they are well past instability of youth. The public is only just beginning to awaken to the economic and social saving which such treatment of prostitutes would entail. Thus far, we have little to show, but a keener general intelligence and interest, than ever before is everywhere manifest, and we may reasonably expect tangible results in the near future.

(d) A regulation has been adopted and has gone into effect, whose aim is to eliminate the selling, by druggists, of proprietary remedies for venereal diseases. Letters have been sent to all druggists in the state and it is a source of gratification to the Division that many replies have been received, which signify an enthusiastic readiness to comply with the new law.

II. We may expect to reduce venereal disease by gaining the recognition of the medical profession and the public, to the fact that these diseases must be removed from the plane of "secret" or "shameful" diseases, to the plane of other contagious infections, which properly belong under the control of public health authorities.

(a) To this end we expect to have all venereal diseases reported to State Board of Health.

For years this question of reporting of venereal diseases has been one of the chief bug-aboos which has arisen to intimidate the medical profession whenever urged to help in the fight. Last month the Division of Venereal Diseases sent out questionnaires to all the states asking for their experience in handling this end of the problem. We have thus far received replies from 18 states. Of these, 15 have made some form of recording compulsory by law. It is interesting to note also, that 5 of these require that the reporting be done by name and address. Regulations in many states are the direct outcome of the Government's program and are of so recent date that figures are not yet available; but in California, Massachusetts and Ohio, where an organized effort has been in progress for some months, the returns offer every encouragment.

The experience of Minnesota thus far has been as follows: From August 1st to August 25th, there has been a total of 360 cases reported, 225 of which are syphilis, 133 gonorrhea, and 2 chancroid. These reports have come, 85 from Minneapolis, 115 from the University Dispensary (chiefly Minneapolis cases) 86 from St. Paul and 74 from the state at large. It is interesting to note, that at least two-thirds of the cases reported here included the name and address.

Those men who have had the largest number of cases to report are almost unanimous in stating that when the confidential nature of these reports is clearly demonstrated, no oppo-

sition on the part of patients need be anticipated.

It is admitted that these returns are yet too slight to be of any great statistical value, but surely they demonstrate clearly that the public mind has changed very materially since the war begun to change the ancient attitude, and the long to have for the first time in our history accurate statistics of the prevalence of these diseases, and invaluable data for the future development of the work.

(b) Education concerning the public health significance of these diseases by means of lectures, moving pictures, exhibits, etc., has already begun to change the ancient attitude, and the effect on the prevalence of the diseases can be inferred from the fact that this education is resulting everywhere throughout the United States in an increase in hospital and dispensary facilities for their treatment, with a proportionate increase in the numbers of patients being treated.

III. We may expect to reduce venereal diseases by making laboratory diagnosis available to all and providing accredited hospitals and dispensaries with arsphenamine free of cost. Thus far the Bureau has distributed 230 ampules of free arsphenamine, has made fifty Wassermanns, and has examined a large number of slides for gonorrhea. No one questions the value of free diagnosis and treatment in the case of diphtheria or rabies. We may safely predict a corresponding value when we apply the same course to venereal diseases.

IV. We may expect to reduce venereal diseases by reducing clandestine prostitution—and thus eliminating a large body of carriers—by carefully organized social work.

(a) Never before has protective work for girls been carried on so accurately and intelligently, as is now under way all over the United States. In our own state the Social Service Department with its head worker, two policewomen and trained psychologist, has already accomplished much constructive work. Such agencies as the Associated Charities, Children's Protective Bureau, etc., constantly use it for the handling of incorrigible girls over whom the suspicion of venereal disease gives us state authority. Names and addresses of infected girls (not professional prostitutes) are frequently procurable from enlisted men and others, and these girls are found, examined, treated if necessary and kept under surveillance. Or, as sometimes happens, they are found to belong to other states, they are sent home and referred to their own state boards of health. Places which girls and men are accustomed to use as rendezvous are watched and many girls returned to their homes, their mothers instructed and warned of their dangers. Already the Travelers' Aid Agent, at the Union Station, St. Paul, announces a marked decrease in the number of girls who hang about here waiting for an opportunity to pick up an incoming soldier. Numerous girls are being treated regularly at the University Dispensary or at the evening clinic for women conducted by the Minneapolis Health Department, who before the establishment of our Social Service Department would have been free to spread their infection throughout the community. A typical court case will perhaps demonstrate better than in any other way the method of procedure.

Two girls were reported to us a source of infection among soldiers, for whose accommodation they kept a flat. Through the police department both were apprehended, brought into court, sentenced to 45 days in the workhouse. One girl was found positive for syphilis and gonorrhea, and the other positive for gonorrhea. They received treatment at the workhouse and while there they were interviewed by a social worker, and on their discharge from the workhouse were referred to the Associated Charities. Their board was paid at the Woman's Hotel. A position was secured for them at the City Hospital. Although this work is hard, the girls have kept the position and are saving money in order to return to their home town in Illinois, from which they have been away about two years. They are reporting for treatment to the Health Department evening clinic and a friendly visitor from the Associated Charities has interested herself in securing some proper recreation for them.

A physician in Rochester reported a young girl of the town as a source of gonorrheal infection of his patient, a 17 year old boy. This girl was located by the social worker and acknowleged that she had had relations with the boy and with five or six others although only 16 years old. She had already come under the notice of the policewoman of the town who had

considered bringing the child into court and was only waiting for more definite evidence to do so. The child was taken to a dispensary for examination. The examination for gonorrhea was negative but the Wassermann was positive. She is now under treatment and is being supervised by the policewoman in question until the matter can be brought into court. It seems best that this girl should receive training in a school like Sauk Center as her home environment is poor.

(b) Thus far, physicians have made no use of this department in their work with private patients. It is quite conceivable however, that in dealing with the highly delicate situations which inevitably arise in association with venereal disease practice, the service of a trained and experienced woman in this field might come as a blessing to patient and physician alike.

V. We may hope to reduce venereal diseases by an organized system of sex education.

The work of instructing people in this hitherto tabooed subject, begun in a comprehensive way in the camps, has spread with remarkable rapidity all over the United States. With the establishment of our Department, a supervisor of education was appointed and perhaps no greater indication of changed public sentiment could be offered than the readiness with which all manner of groups have complied with suggestions for lectures, pamphlets, etc.

Since March first, we have established in Minnesota courses at the State University and normal schools, not only for the dissemination of knowledge to students themselves, but with the hope of preparing teachers better to meet the sex problems of school children.

There have been courses given as well to nurses, summer schools, parents' and teachers' associations; single lectures to social workers, women's clubs, Y. W. C. A. girls' clubs, high schools, stores, and factories. Thus far, about 20,000 people have been reached by these lectures.

In addition to talks, thousands of pamphlets have been circulated, circulating exhibit put on the road for county fairs, stereomotorgraph slides exhibited at Fort Snelling and in camps and the film, "Fit to Fight" shown to large groups of enlisted men and drafted men, to whom, moreover, the director has given several lectures.

Surgeon General Gorgas has stated that he considers education to be the most important factor in this war on venereal diseases. We believe that sex education must be along lines not only of information on venereal diseases but with the hope of creating a permanent higher standing of sex conduct, irrespective of fear of disease. There is probably nothing which contributes so largely to sex immorality, and thus to venereal diseases, as a vulgar and base interpretation of sex itself. Ordinarily the beginnings of an unwholesome attitude are made in the impressionable years of early childhood.

We can scarcely hope for any permanent good arising from our present campaign until parents and teachers, as well as doctors, have awakened to the need of a sane idealism in sex, an idealism based not on ignorance nor false illusions, but on a knowledge of sex first as clean and right, and second as a great positive factor in life for individual and social development.

All of these things we may expect to come to pass as our program is gradually accepted throughout the state. This program, it must be remembered is not merely our own, but that of our Federal Government itself, and the Government backs it, not only by moral support but by the promise of funds as well. On July 6th, 1918 Congress passed a bill as an amendment to the Army Appropriation Bill, which carried the following provisions:

(1) An appropriation of $1,000,000 for "assisting the various states in caring for civilian persons whose detention, isolation, quarantine or commitment to institutions may be found necessary . . . ."

(2) An appropriation of $1,000,000 for State Boards of Health.

(3) An appropriation of $100,000 to be paid to medical schools for medical research.

(4) An appropriation of $300,000 to be paid to colleges and other organizations for scientific research in fields of education, psychology and sociology.

In spite of this aid, we are not so optimistic as to promise immediate and startling results. But with the physicians conversant with the situation and lined up with the Federal and State Governments, with civil authorities and to have a medical degree" here is a report from the Federation of State Medical Boards' Bulletin of February, 1918, which says—

(1) A general knowledge of entire human

selves of it. In return, we ask that you conscientiously report to the Board of Health office, every case which comes to your attention; we urge that you make every effort to trace such a case to the source of infection, and that you do not rest until you are assured as to whether or not there are other members in the family similarly diseased.

The medical profession of Minnesota has responded most generously to the call for surgeons and physicians for the army. It cannot afford to respond with any less alacrity to this call of the Government and State combined, against an evil which with all its ramifications and by-products is more disastrous to human happiness and well being than this devastating war itself.

REFRACTIVE NEEDS IN CHILDREN*

E. A. Loomis, A. B., M. D.
Minneapolis, Minn.

As a result of my work during the past two and one-half years, at the University of Minnesota Refraction Clinic, I am lead to believe that there is still need for more thorough understanding of this time-worn subject of refraction. This is especially true in its relation to children. It was thought in the past and many still cling to the idea that only middle aged and old folks need glasses and that children are all right so long as they can see at a distance and are active at play. It has been shown that three out of every ten children have an error that needs a thorough refraction. I want to say that it is an injustice and injury to the child for the parents to take him to the optician for a fitting where the same method is used as for themselves.

Judging from the clinical work on patients from all parts of the State as well as the Twin Cities, I fear the general physician does not fully realize the injury that may result to a child when refracted by an optician who depends on the subjective method alone. By making the subjective tests and then following with the use of atropine for three days and then testing again with the retinoscope, we usually find we are so far from the correct measure that we have decided not to depend on the subjective tests for any degree of accuracy. The accommodation must be put at rest to relax it thoroughly or you will make grave mistakes. We often find children coming into the clinic wearing minus glasses when they are far sighted and should have plus glasses. Putting a minus lens on a hyperopic eye simply accentuates the error already present and when to this is added the extra strain of school work to a pliable, soft eye ball progressive myopia is liable to result.

Children with squint eye are often brought in whose parents say they have been told by their doctor that the child would outgrow the squint. Depending on this advice they have lost valuable time and should have been informed that the squint would grow worse if left uncorrected.

As these conditions are not uncommon, I am prompted to make some remarks on what might be entitled "prophylatic" refraction of children and while doing so urge the physicians that it is incumbent on them to detect the errors early and then see that proper refraction is given. Hence they would be preventing certain conditions from developing which would become permanent in adult life.

Let me again emphasize that for a proper degree of accuracy in refracting children we depend on the objective method, that is, the use of atropine and the retinoscope. Other methods are too much like guess work. We object to the optician who uses the subjective method trying to make a reliable test and to his prescribing for the most delicate organ of the body, the anatomy and pathology of which he is not acquainted. He is doing this and should properly call it practicing medicine. Let it be known by the laity as well as by him that we feel that he should obtain a degree or license in medicine or otherwise confine his ability to the middle aged and presbyopes, whose eyes have reached a fixed growth and are not so easily harmed. Then too, such a patient will be more apt to complain if not properly fitted.

To give some reasons "Why an optician ought obtained by any operation and the necessity for glasses would be present just as much after an operation." With an operation then, there is also the possibility of its converting a convergent squint into a divergent form.

It might be of interest to refer to the wonderful mechanism of co-ordination and balance brought about by the six delicate ocular muscles

*Presented before the Southern Minnesota Medical Association at Mankato, January, 1919.

body is necessary to intelligently treat eye diseases.

(2) The majority of eye diseases are not to be cured by the mere fitting of glasses.

(3) Medicine is required in seventy per cent of all eye diseases.

(4) Many systemic diseases have their first signs appearing in the eye.

I am sure I voice the sentiments of the leading oculists when I say that the sight of the eye from the standpoint of glasses is settled before puberty. Dr. John Weeks of New York City recently wrote in the American Magazine that, out of twenty million school children examined five million had refractive errors and needed attention. We have refracted at the Clinic nearly four thousand cases during the past two and one-half years; about one-half of these were children and approximately seventy-five per-cent of them were treated for hyperopia and astigmatism. To these we will limit our remarks.

It was demonstrated by the late Dr. Ely that the normal child is born farsighted. Later, especially during school life when the accommodation is applied for long periods to close work the tissues of the eyeballs become congested, followed by lengthening of the eyeball and myopia results. This far-sightedness becomes a detriment to the child in early school work when the eye is strained to the yielding point.

We know that animals and savages are farsighted and we can see that it is an advantage to them when distance vision is so essential to their existence.

When you see a child suffering from such symptoms as styes, red conjunctiva, crusted lids or find him holding the head or lids in an abnormal position in order to see, do not wait because he does not make much complaint but have a thorough test made lest later you will have a more serious and permanent condition to deal with.

Another frequent condition caused by hyperopia is either manifest convergent squint or esotropia and latent squint or esophoria. The latter is found quite commonly when looked for. In this form there is a tendency for the eye to turn in, not manifest unless brought out by some extra strain, sickness or fatigue. The mother often attributes it to a certain fall. The profession should not be misled but should suspect an error and have it looked for. For detecting most muscle errors a simple method which does not require any special apparatus is the parallex test. To use it cover one eye with a card: the other is fixed at a point straight ahead. If muscle imbalance is present the covered eye will deviate to the weak side. You will recall that the reason hyperopia and convergence are so intimately associated is that the third cranial nerve supplies both the ciliary and the rectimuscles. When you have corrected all hyperopia you have also reduced the desire to converge.

I can safely say that we correct about eighty per cent of cases with convergent squint. This is particularly true when it is unilateral and taken early before visual acuity has diminished to a point where fusion cannot be developed. In nearly all cases after using sufficient atropine and putting on the full correction, we instruct the parents to cover the good eye at regular intervals or use more of the mydriatic; then later we try to develop fusion by the use of steroscopic pictures. When the patient is returned in a year or so by the school nurse we find very pleasing results and urge on him the importance in persisting in the use of the glasses in order to hold the eyes permanently straight. We have corrected children as young as eighteen months and find that when the glasses are needed the child readily accepts them and will cry for them when removed. The younger cases and even up to eight or ten years are the most successfully treated. But the parents should be informed that if the glasses do not correct the squint before the child grows to fifteen or sixteen years of age, the only course open is to operate on the eye muscles. That is only for cosmetic effect for we generally find by that time the squinting eye has become amblyopic and vision cannot be restored by operation.

Dr. Clarence Loeb in an article in the American Journal of Ophthalomogy reports twenty-nine cases of strabismus in which all were improved who persisted in the use of glasses. He says, "Surely no better results could have been communities thoroughly aroused to the situation, surely this campaign against venereal diseases can result only in victory.

We offer you then, the use of our machinery for investigation, for diagnosis, for social service, for education, and we ask you to avail your-

and the proper amount of nerve stimulus that must be sent to each muscle to have perfect parallel vision. It has been shown that man is the only animal which has binocular single vision; that is, he sees one object with both eyes, there being an overlapping of the visual fields. This causes a constant effort to keep from having diplopia especially if there is imperfect muscle balance. You will recall that in foetal life the eyes are developed on either side of the head but come around to the frontal position before birth. Binocular single vision is not present then. You have no doubt watched the newborn infant's eyes wandering aimlessly about either converging or diverging until about six to eight months old when the mother or nurse will tell you the child is beginning to "notice things." This is called the fusion faculty and it can be trained and corrected quite easily up to six or seven years but rather poorly after that age. Hence we see the importance of correcting early errors that may be hindering the fusion faculty. Parents should be told that the earlier the correction is made the better; not that the child will outgrow a squint when present.

Another important class of children to deal with are those suffering from headache and nervous temperoment. The excessive nerve impulse sent to the muscles to hold the accommodation and keep from having diplopia cause these symptoms. The most conservative oculists make the statement that fifty per cent of headaches come from the eyes and are due either to refractive errors or muscle imbalance. I feel certain the percentage should be increased somewhat. When the hyperopia or astigmatism is properly refracted in this class of cases the result is very gratifying. If these were left uncorrected we would be helping to add to the large number of neurotic adults we already have to deal with. Chidren are now living under more trying nerve strain than in the past and are entitled to have every extra strain removed.

Then again there is a class of patients brought in by the school nurses, who persistently remain behind in their school grades. We find that very many of these children have a marked error and invariably advise that any mentally retarded children should be given the benefit of a thorough refraction. In almost all cases an error of refraction or some pathological condition has caused them to lag behind, because discouraged and lose interest in school work. They may have good distance vision and be active and bright on the playground. It is an injustice to classify such children as stupid until their eyes are thoroughly tested. It is also a waste of time and money to send a child to school when his eyes are not in proper condition to do the work assigned. Unless there is a pathological condition, the teachers report marked improvement in the child's work by the aid of glasses. If glasses will not improve them the parents can be advised of the best line of work for the child to follow, in view of the trouble. I consider this subject of sufficient importance to recommend that every child be sent to the oculist before starting in school, to be advised as to whether his eyes are able to do the work.

At the University of Minnesota Medical School now every senior is required to take a short Clinical Course in Refraction. It only goes to show that the importance of this subject is being more fully realized. It is not intended to make oculists out of them all but only to get before them the more important principles of a subject that has not had its proper place in the medical schools in the past.

To summarize:

(1) There is no better guarantee of a child's welfare than prophylactic refraction and hence I would advise that every child be examined by an oculist before entering school.

(2) Childhood is the most important age in which to have the eyes examined and treated.

(3) About seventy-five per cent of the children treated had hyperopia or astigmatism or both. This means strain on the accommodation and when excessive results in squint, headache, nervousness, and hinderance in school work.

(4) The most common mistake made by the optician when he fits children without a mydriatic is that of mistaking spasm of accommodation for myopia and putting minus lenses on farsighted eyes, thereby simply increasing the error present.

(5) There should be a nurse to visit every school and make inspection.

(6) I would urge the profession to be alert to detect squint early and have a refraction made before seven years old if possible. You will find the child taking the glasses more graciously than an adult. Remember the old simile, "Just as the twig is bent the tree is inclined."

DISCUSSION

DR. E. W. BENHAM, Mankato: Dr. Loomis has covered the ground very well. His paper was very interesting, and I cannot add much to what he has said.

Regarding squint, it is important, it seems to me, to have the child early because it is during the first six or seven years of life that the retina develops, and unless correction of the squinting eye is undertaken during that period the end results, so far as vision is concerned, are not good. The squinting eye continues to squint and remains defective in vision.

There are several factors in the causation of squint, one of which is the fusion faculty. We sometimes see a high degree of hyperopia, with no squint at all; on the other hand, we may see a patient with a low degree of hyperopia, with marked squint; in one case the fusion faculty is good, while in the other it is weak. It is very reasonable to think that functional nervous disease may be brought on by uncorrected eye strain in children. It seems to have been demonstrated that excessive fatigue produces alterations in the size and shape of the central nerve cells. Excessive fatigue also induces disturbances in the general metabolism of the body. If these things are true, it would seem quite possible that the nervous system of a child may suffer severely from uncorrected errors of refraction as a result of this fatigue.

The systematic examination of children of school age recommended by Dr. Loomis is important for several reasons. Backward pupils are not only losing their own time but they are a source of considerable extra expense to the community in lengthening the course of study in the grades. These systematic examinations would bring out many cases of uncorrected visual trouble which would otherwise escape notice, because of the fact that children do not complain very much of errors of refraction, of so-called eye strain. Unless they have severe headache or are unable to do the school work at all, they do not say much about it.

As to the teaching of refraction as a part of the medical course, there is something to be said on both sides of the question. Such a course to be of any value ought to be pretty thorough, and, it seems to me, refraction can hardly be taught in a satisfactory manner in a few weeks, or in the short time medical students would be able to give it in the crowded curriculum they are confined to. Possibly such instruction as is needed in refraction, which is to be carried on by the general practitioner, would be better given in a post-graduate course. It would be highly desirable, of course, to have all refraction work done by medical men if that were possible, instead of having it done so many times over the department store counters and by men who perhaps today are uneducated laymen and tomorrow are doctors of optometry, or have assumed some other title, to make the public think they are medical men, or near medical men. However, as things are at present the opticians seem to have a certain field of usefulness, and since they seem to have come to stay, it is a question whether that field will be better filled by educating the general practitioner more thoroughly in refractive work, or by educating the optician more thoroughly in the diagnosis of eye conditions. Every one runs across cases of glaucoma which were not recognized and have resulted in blindness due to the incompetency of opticians, hence we realize the great necessity of more thorough instructions if they are to do refraction work. That is one reason why I think the limited time which can be given to refraction work in the medical course, which is already overcrowded, might raise the question of the possibility of sending out poorly trained men in this direction.

Refraction does not create much interest in the mind of the average medical man, nevertheless it is an important thing, and those of us who are doing refraction work realize this probably more than the general practitioner does.

DR. W. L. BEEBE, St. Cloud: My friend on the right thinks it is advisable for some one to give his experience as a country doctor who tries to do general practice. I agree with what the first speaker (Dr. Loomis) has said, very beautifully, that the first course medical students should be taught something in the line of ophthalmology. The argument of the second speaker (Dr. Benham) does not impress me forcibly. It is true, if we expected to make a number of oculists out of practitioners, it is a different proposition, but imagine ourselves in a country village and we know nothing about refraction or about many of the diseases of the eye, it seems to me, we should have sense enough to refer such patients to an oculist and not to an optician. Is not that the proper view to take in regard to such cases?

DR. LOOMIS (closing): As Dr. Benham says, the fusion faculty is in the cerebrum, and so we find, if the fault is central and not due to refractive error, glasses do not help the squint.

It is in monocular convergent squint due to hyperopia that refraction is the most successful.

In alternating convergent squint we never expect much improvement.

Am glad to hear that Dr. Beebe thinks it an excellent idea for the University to give the medical students diagnostic refractive clinic work. We try to teach them, in the short time allotted, to at least do as well as the optician, and besides to be able to diagnose a diseased eye.

I am willing to grant with Dr. Benham that the optician has a field of usefulness, and that is in the refracting adults and presbyopes, but the methods he uses on children's eyes are often faulty, and open to error and may work harm to the soft, pliable eye of the child. These cases should be handled by the oculist.

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EDITORIAL

THE STATE MEETING AT MINNEAPOLIS

Realization fully came up to expectation as far as the annual meeting of the State Medical Association in Minneapolis was concerned. The social side of the meeting was particularly accentuated in the pleasure of meeting friends and former acquaintances following war absences.

Thruout the program the influence of war medicine and surgery was apparent. This was most striking in the choice of surgical subjects. The surgical side of our profession is undoubtedly better fitted to meet surgical situations more particularly those due to accident and injury than ever before. It must not be forgotten however that surgery proper constituted a comparatively small part of medical practice in the late war. The strictly medical side of the profession profited fully as much in the way of experience and interchange of ideas.

A complete report of the proceedings of the Association will appear later in this publication. Suffice it for the present to remark that Dr. J. H. Adair of Owatonna was the unanimous choice for president for the year 1920, that the address of the retiring president Dr. George Douglas Head was a masterpiece of constructive criticism of medical education. It was decided to hold the meeting next fall in St. Paul.

THE ASSOCIATION FOR MEDICAL EDUCATION

During the years immediately preceding the Great War foreign post-graduate work had slowly but surely been losing ground. By the year of 1914 foreign study had ceased to be the sine qua non of medical training.

The opportunity for autopsy study in Germany and Austria made the department of pathology and particularly that of gross pathology in Vienna unsurpassed. The report of the Mayo clinic and the General Memorial Hospital that necropsies have been obtained in 90 per cent of cases indicates a decided advance along these lines in this country. It must ever be true that the greater the percentage of necropsies obtained the greater the stimulus to careful study and the nearer medicine as a pure science is approached.

The department of eye, ear, nose and throat in Vienna was particularly attractive to Americans as the courses were high grade and were given almost entirely in English. Those of roentgenology in Vienna, operative surgery and pediatric diatetices in Berlin, psychiatry in Paris, and obstetrics in Dublin were particularly well known and afforded unusual opportunities to American physicians. The numerous activities in London Hospitals should also be mentioned.

Opportunities for advanced study in America had, however, gradually increased so that a variety of work of high calibre could be obtained in a short time without crossing the water. American surgery had assumed a rank unsurpassed abroad and the clinics of Rochester, Chicago, Boston, New York, Philadelphia and Baltimore had become famous. General anaesthesia had not only been discovered in this country, but had been elaborated to a point unequaled in certain European countries notably Germany. It seems strange with the German aptitude for detail as shown particularly in medical specialization, a well administered general anaesthetic should have been of such a rare occurrence in many of the larger clinics.

At the time of which we are speaking it was possible through the organization of the post-graduate work in Europe notably in Vienna and Berlin for an American physician to spend several months in profitable medical study in

Europe combining with this a European trip and all at no greater expense then the same period of study spent in New York. In addition there was a certain amount of eclat derived from the phrase "Studied in Europe."

With the onset of this war in Europe the old opportunities for post-graduate work became almost nil. Whether German or Austrian clinics will ever appeal to Americans in the old way is problematic. It seems probable that in the distant future when time shall have healed the injured feelings caused by the war that other clinics in this country and other parts of Europe will have supplanted those of Germany and Austria in this regard. The "liebenswurdige" Vienese stand a better show of coming back than the Berliners and may be expected to bid for a renewal of an activity, to them quite important from a financial standpoint.

It is gratifying to note that the long looked for beginning in systematizing medical education and providing for the increasing demand for post-graduate work in this country has been made. New York, whose size designates it as the proper location for the headquarters has made the desired step. An Association for Medical Education comprising representatives of all medical activities in New York and providing for representatives from the medical profession at large, has been organized with a corporate membership of three hundred and a board of trustees numbering twenty-seven. Dr. Henry O. Reik of Baltimore has been selected as full time executive secretary and funds have already been provided for the maintenance of a bureau of information and correspondence at the New York Academy of Medicine, 17 West Forty Third Street. It is to be hoped that other medical centers will co-operate in an effort to organize the principal facilities for medical edueation in this country. And this will be done if the officers of this association recognize the true relative merit of clinics outside of New York City.

There are committees in London and Paris which are organizing the medical resources of England and France for the benefit of visiting medical men from the Americas. There will undoubtedly be a demand for post-graduate work in London and Paris among American physicians and there should be. No country should be self-sufficient even in a medical way. It appears that Germany may have made this error among numerous others that have been pointed out. The German physicians who visited clinics outside of their own country were few and far between.

There are rumors that an endeavor will be made to raise a fund of five million dollars to be used for the development of post-graduate facilities in London for Americans. It would seem wiser to raise such a fund for the Association of Medical Education in this country first and not run the chance of the tail wagging the dog. It has not been made clear just how much, if any, of the recent twenty million dollar gift of John D. Rockefeller to medical edueation in the United States will be available for the work of this new association.

SPECIAL ARTICLE

MINNESOTA PROGRAM AGAINST INFLUENZA

By Charles E. Smith, Jr., M. D.,
Executive Officer
Minnesota State Board of Health.

FOREWORD

The lack of a definite plan for the control of influenza handicapped workers somewhat last fall in their efforts. With a view towards preparedness against the possible emergency of the return of this disease, the Minnesota state board of health has approved and publishes the following as its program for the ensuing year. No claim is made for originality, the program being built along certain lines suggested by the United States Public Health Service and by a committee from the conference of state and provincial health officers of North America. Experience in Minnesota during the past year and the advice of authorities throughout the country have been used as the basis for this plan.

INTRODUCTORY STATEMENT

The 1918 epidemic of influenza showed that the disease was one of extreme communicability. It is limited to human beings. It is doubtless due to a micro organism which has not yet been identified. A mental condition will not cause the disease in itself, but does increase the suffering of one who has contracted influenza or who believes that he has. It is assumed that the disease prevalent is identical with the one heretofore known as influenza, although this statement has not been proven.

For diagnosis, laboratory methods offer very little assistance. Length of infectivity cannot be deter-

mined by laboratory methods. Such methods, however, are highly advised for purposes of discovery of information connected with the etiology and epidemiology of the disease. Pneumonia due to invasion of pulmonary tissue by the streptococcus or penumococcus is probably secondary to the initial attack of influenza and responsibile for the deaths which occur.

Evidence is conclusive that the causative agent of the disease is given off from the nose and mouth of infected persons and gains entrance through the nose and mouth of the person who contracts the disease. Contact may be direct or indirect. There is no other way in which the disease is transmitted.

PREVENTION

Prevention of the spread of this disease must be accomplished by prevention of the secretions from the nose and mouth of the infected person reaching any other person. The following ways are suggested:

I. *Break the channel of communication* by whicb the infective agent passes from one individual to another.

A. It is extremely important to prevent droplet infection.

B. It is important to prevent contamination by sputum on the hands and eating or drinking u ensils.

C. There is a slight danger that food and drink may carry contamination by the secretions. Preparation of food and drink should be supervised.

II. *Render person exposed to infection immune* or more resistant by the use of vaccines. It is supposed that vaccines prevent or mitigate influenza itself, or that they prevent or mitigate complications recognized as due to influenza or to streptococci and pneumococci. Evidence as to the success or uselessness of vaccines is contradictory and irreconcilable. This board neither recommends or discourages their use. It desires further information. It firmly states that physicians and health officers should promise nothing from vaccinaton and believes that the public will be satisfied with the statement that "Vaccines may or may not be of service. Their use is neither recommended or discouraged; the question is left to the individual physician and his patient."

III. *Increase the natural resistance* of persons exposed to the disease by augmented healthfulness. Physical and nervous exhaustion should be avoided by paying due regard to rest, exercise, physical and mental labor and hours of sleep. Apprehension and worry should be discouraged. Youth and bodily vigor do not guarantee immunity.

IV. *Other Preventive Measures.* The character of the community determines entirely the preventive measures practicable. The same measures cannot be applied to small rural communities that should be applied to large cities. The local health officer should take such additional steps as he believes necessary for the control of disease in his community.

A. Authority in health matters should be centralized.

B. Methods of securing reports of the situation should be at hand. (Note influenza is a reportable disease in Minnesota.)

C. Education: Publicity with respect to respiratory hygiene should be widespread. The dangers from coughing and sneezing should be discussed and the dangers from nasal discharges should be emphasized. The necessity of keeping the fingers out of the nose and mouth should be dwelt on. Necessity for extreme caution in the way of transfer of secre tions should be considered, particularly with regard to carriers. Hand washing before eating should be encouraged. The gospel of fresh air and general hygiene should be preached. Dangers from common colds should be borne in mind.

D. Administration:

1. Abolish the common drinking cup and enforce proper washing of glasses at soda fountains and other public drinking places.
2. Proper ventilation should be enforced.
3. Nonessential gatherings are prohibited. Gatherings from which certain numbers of people earn their livelihood should be controlled as to size and frequency recognizing the danger of the transmission of discharges of the upper respiratory tract from one person to another. Where the necessary activities of the population such as the performance of daily work and earning of a living compel contact, very little is gained by closing certain types of meeting places. If, on the other hand, the community can function without much contact between individual members thereof, much is gained. *The closing of meeting places* other than nonessential gatherings is effective in the control of influenza in inverse ratio to the size of the population of the community in which said closure is enforced. *Closure of schools* is not recommended as a routine policy for any epidemic disease. The children should be kept under observation and those excluded who show symptoms of disturbance of the upper respiratory tract. There should be an adequate system of inspection in the schools. If through sickness or fear the limited attendance at school makes necessary the closure thereof to prevent the drag on routine school work of the children returning later, then schools should not be reopened unless there is sufficient nursing or medical help to examine all children at reassembly and exclude those suffering from respiratory symtoms. *Church services* should continue but be reduced to the lowest number consistent with adequate discharge of necessary religious functions, and should be conducted in such a

way that the intimacy and frequency of personal contact during the services is reduced to a minimum. It is granted that *theaters and movies* open may be used for certain educational benefits, but attention is also directed to the fact that their closure has certain educational value. Exclusion of a dangerous cougher from such an assembly must be rigid, but it must be borne in mind that the damage is done when he coughs. The efficiency of sanitation and ventilation should be made the basis on which theaters and movies are closed. If such closure becomes necessary, those having the least efficient system should be closed first. *Dance halls, billiard parlors* should be closed. *Street cars* should be adequately ventilated, overcrowding should be discouraged, walking to work should be encouraged. *Public funerals are prohibited* for contagious deaths, and no such funeral service may be held from the church. All funerals must be private and attendance limited, as they are unnecessary assemblies in limited quarters increasing contacts and multiplying sources of infection. The funeral cortege is limited to the fewest numer of conveyances possible.

4. Face masks should be worn by all in attendance upon the sick or in the household with the sick and by those the nature of whose duties brings them in close relationship with the exhalations of other people, such may be barbers, dentists, clerks in stores, etc. Marked educational advantage is derived from the use of masks in assemblies.
5. *Early isolation of patients* suffering from influenza or pneumonia is necessary. The house should be placarded and the place quarantined.
6. When epidemics are widespread ease in rendering adequate medical attention is gained by hospitalization of all patients. Large wards are discouraged. Where home facilities permit and there is no danger of overtaxing the already overworked, nursing profession home treatment should be advised. Laws regarding sneezing and coughing should be enacted and enforced for educational results.
7. Terminal fumigation is not necessary. Cleaning, sunning and airing the former sick room are necessary.
8. Alcohol has no preventive benefits.
9. The use of sprays, gargles, etc., is not encouraged except for general principles of cleanliness.

MISCELLANEOUS CONSIDERATIONS

1. Colleges, boarding schools, asylums and similar establishments may find it advantageous to enforce quarantine against the outer world. If such institutions be closed, however, pupils must stay at the schools to prevent scattering of foci of infection throughout the state and other states. (See regulation.)

2. Where it becomes necessary to transfer patients ill with influenza from one sanitary district to another it can only be done with the consent of the health officer of the district left and the district to which the patient is going. It is further required that such transfer be made without expense to the community in which the patients will arrive and that the transfer must be made in such a way that no one on route is exposed to the danger of infection. (See regulation.)

3. Measures of control should be directed first to the prevention of the disease and second to distributing the epidemic over such a period of time that its burden is not excessive at any one moment. Statistics and records should be carefully kept and are recognized as of exceeding importance. The data should be collected in a uniform manner, covering carefully the facts asked for by the Minnesota state board of health. The encouragement of respiratory hygiene begun now should have certain influence in the control of influenza, such as the lessening of its morbidity and mortality rates, the prevention of pneumonia both complicating influenza and in general throughout the state, and possible and widespread benefit in the elimination of all diseases of the upper respiratory tract in the future.

RECAPITULATION

1. Dissemination of educational literature and instructions.
2. Reporting, isolation, quarantine, attention to regulations, centralization of control.
3. Local additional control, as occasion warrants.
4. List of available nurses on file with state board of health. Their services are available to a community needing them. The expense to be borne by the community.
5. Listing of available doctors for emergency work, such doctors to be furnished by the United States public health service at a salary of $200.00 per month, $4.00 a day for expenses and railroad fares Communicate with the state board of health for particulars.
6. Co-operation with other agencies in their programs in regard to influenza.

OBITUARY

Dr. Axel F. Blomburgh died at his home 1910 Columbus Ave., Minneapolis, September 7th, after an illness of three weeks. Dr. Blomburgh was born in Sweden April 3, 1967. He came to Minnesota at the age of 4 years, was graduated from Hamline University in 1897 and then practiced nine years at St. Hilaire, Minn. He then moved to Minneapolis where he practiced until his death. He was a member of several lodges and the Hennepin County Medical Society and the Minnesota State Medical Association.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MISSISSIPPI VALLEY CONFERENCE ON TUBERCULOSIS

The seventh annual meeting of the Mississippi Valley Conference on Tuberculosis was held at Des Moines, Iowa, September 22, 23 and 24, 1919, under the following officers: Mr. Sherman C. Kingsley, President, Cleveland, Ohio; Dr. J. W. Pettit, Vice-President, Ottowa, Illinois and Dr. R. J. Reed, Secretary-Treasurer, Des Moines, Iowa. Registrations totaled almost 500.

The conference was welcomed by Gov. Harding, who has always been a staunch supporter of public tuberculosis and health work. Observations on tuberculosis work abroad were given by Dr. Walter J. Marcley, Minneapolis, Dr. Geo. T. Palmer, Springfield, Ill., Major W. H. Watterson, Federal Board of Vocational Education, Washington, D. C. and Mr. Kidner, New York. In the evening the President's address and one by Miss Julia Lathrop, Chief of the Federal Children's Bureau, Washington, D. C., were both interesting. Numerous subdivision meetings and diagnostic clinics were held, all of which were most instructive.

Officers for the 1920 Conference are Dr. John H. Peck, President, Des Moines, Iowa, Mr. Walter McNab Miller, Vice-President, St. Louis, Mo., Dr. A. T. Laird, Secretary-Treasurer, Supt. Nopening Sanatorium, Duluth, Minn. Duluth was selected as the meeting place for 1920.

The Mississippi Valley Sanatorium Association held its session, as usual, in conjunction with the Conference—Dr. H. V. Scarborough, President. This section discussed Sanatorium nursing, occupational therapy and standardization of sanatoria. The report on standardization was made by Dr. Robinson Bosworth.

Officers of the Sanatorium Association for 1920 are Dr. Robinson Bosworth, President, St. Paul; Dr. G. L. Bellis, Vice-President, Milwaukee and Dr. E. B. Pierce, Secretary-Treasurer, State Sanatorium, Howell, Michigan.

NICOLLET—LE SUEUR MEDICAL SOCIETY

The semi-annual meeting of the Nicollet-Le Sueur Medical Society was held at St. Peter State Hospital September 30.

It was decided to change the date of the annual meeting to December in order that the name of the officers for the ensuing year might appear in the annual roster.

The names of those members who served as Medical Officers during the late war were ordered inscribed on the minutes.

A new fee bill was adopted.

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

The annual meeting of the Southern Minnesota Medical Association will be held at Mankato, Minnesota, December 1st and 2nd, 1919. The program committee is as follows: Dr. A. F. Schmitt, Chairman, Mankato; Dr. H. W. Meyerding, Rochester and Dr. E. M. Hammes, St. Paul.

The meeting will have its headquarters at the Hotel Saulpaugh.

The annual banquet will be held on Monday evening, at 8:30 o'clock p. m. at the Hotel Saulpaugh, following which the scientific program will be begun. The Blue Earth County Medical Society will entertain the visiting physicians at luncheon on Tuesday, December 2nd.

The committee of arrangements is making rather elaborate preparations for the entertainment of the wives and ladies who accompany the physicians to the meeting.

Among the speakers who will appear on the program are:

Dr. Joseph B. DeLee of Chicago, Illinois.
Dr. C. H. Mayo, of Rochester, Minnesota.
Dr. A. D. Dunn, of Omaha, Nebraska.
Dr. Geo. Eusterman, of Rochester, Minnesota.
Dr. E. Starr Judd, of Rochester, Minn.
Dr. Wm. C. MacCarty, of Rochester, Minnesota.
Dr. Horace Newhart, of Minneapolis, Minnesota.
Dr. Emil Geist, of Minneapolis, Minnesota.

MAYO FOUNDATION LECTURES AND CLINICS FOR QUARTER BEGINNING SEPTEMBER 29, 1919.

The following Mayo Foundation lectures and clinics will be given during the quarter beginning September 29, 1919. They are open to all Mayo Foundation Fellows and Scholars and to all visiting physicians and surgeons at Rochester, Minnesota.

LECTURES

Lectures will be given at 8:30 p. m., in the Assembly Room, Clinic Building, or the Club Rooms, Y. M. C. A. Building, as announced daily.

October

Thursday, 2—Dr. A. C. Broders, Basal Cell Epitheliomas.

Friday, 3—Dr. A. C. Broders, Xanthis Tumors.

Monday, 6—Dr. Georges Dreyer (Professor of Pathology, Oxford University, England.) The Aim and Importance of Standardization in Medicine.

Tuesday, 7—Dr. Georges Dreyer. Results Already Achieved by the Adoption of Certain Standards.

Thursday, 9 and Friday 10—(Lectures omitted on account of meeting of the Society of Resident and Ex-Resident Physicians of the Mayo Clinic and of The Society of Clinical Surgery.)

Monday, 13—Dr. Georges Dreyer. Vital Capacity and Physical Fitness.

Tuesday, 14—Associate Professor. Pathology of the Gall bladder. W. C. MacCarty.

Thursday, 16—W. C. MacCarty. Pathology of the Breast.

Friday, 17—W. C. MacCarty. Biological Conception of Neoplasms and its Aerminology.

Monday, 20—Assistant Professor. W. W. Bissell. Purposes of Necropsies.

Tuesday, 21—W. W. Bissell. Phases of Routine Necropsy Technic.

Thursday, 23—W. W. Bissell. Summary of Findings in Chronic Non-operative Cases.

Friday, 24—W. W. Bissell. Summary of Findings in Postoperative Cases.

Monday, 27—Assistant Professor W. L. Benedict. The Eye and Diseases of the Kidney.

Tuesday, 28—W. L. Benedict. The Eye and Diseases of the Circulation and Anemia.

Thursday, 30—W. L. Benedict. The Eye and Diseases of the Respiratory and Digestive Tracts.

Friday, 31—Dr. A. D. Prangen. Diagnosis and Treatment of Squint.

November

Monday, 3—Assistant Professor H. I. Lillie. Acute Infection of Ear, Nose and Throat.

Tuesday, 4—H. I. Lillie. Headaches.

Thursday, 6—H. I. Lillie. Physics and Physiology of Equilibration Tests.

Friday, 7—H. I. Lillie. Clinical Application of Equilibration Tests.

Monday, 10—Assistant Professor G. B. New. Plastic Sugery of the Face.

Tuesday, 11—G. B. New. The Diagnosis of Tumors of the Nose, Throat and Mouth.

Thursday, 13—G. B. New. The Larynx in General Medical Diagnosis.

Friday, 14—G. B. New. Radium Treatment of Neoplasms of the Head and Neck.

Monday, 17—Assistant Professor B. S. Gardner. Dental Infection in Relation to Systemic Disease.

Tuesday, 18—Professor E. C. Rosenow. Pathogenesis of Focal Infection.

Thursday, 20—E. C. Rosenow. Pathogensis of Spontaneous and Experimental Appendicitis, Gastric Ulcer and Cholecystitis.

Friday, 21—E. C. Rosenow. Studies in Influenza and Pneumonia.

Monday, 24—Associate Professor W. E. Sistrunk. Surgical Treatment of Lymphoedema and Elephantiasis.

Tuesday, 25—W. E. Sistrunk. Colitis and its Surgical Treatment.

Friday, 28—Dr. V. C. Hunt. Preparation of Patients for Operation.

December

Monday, 1—Professor Louis B. Wilson. Pathology of the Prostate.

Tuesday, 2—Associate Professor E. S. Judd. Principles of Surgery of the Prostate.

Thursday, 4—Dr. W. J. Mayo. The Relation of Surgery to Physics, Chemistry, Biology and Physiology.

Friday, 5—Instructor J. D. Pemberton. Postoperative Care.

Monday, 8—Associate Professor W. C. MacCarty. Pathology of Gastric Ulcer.

Tuesday, 9—Associate Professor D. C. Balfour. Principles of Surgery of Gastric Ulcer.

Thursday 11—Associate Professor W. E. Sistrunk. Surgery of the Neck.

Friday, 12—Professor C. H. Mayo. Surgery of the Thyroid.

Monday, 15—Associate Professor M. S. Henderson.

Tuesday, 16—M. S. Henderson. Underlying Principles of Orthopedic Surgery.

Tuesday, 16—M. S. Henderson. Mechanical Derangements of Joints.

Thursday, 18—M. S. Henderson. Tuberculosis of the Knee.

Friday, 19—M. S. Henderson. Tuberculosis of the Spine.

CLINICAL DISCUSSIONS AND DEMONSTRATIONS

The following Clinical Discussions and Demonstrations will be given at the hours indicated throughout the quarter in the Assembly Room, Clinic Building. Visiting physicians and surgeons desiring to attend are requested to report promptly on the hour.

Mondays, 5:00 p. m.

Diseases of the Stomach, Gall-bladder and Pancreas.

Assistant Professor, G. B. Eusterman; Dr. D. M. Berkman, Dr. R. M. Wilder, Dr. H. R. Hartman.

Tuesdays, 5:00 p. m.

General Clinic, Diseases of Pelvic Organs, Diagnosis of Acute Surgical Conditions.

Assistant Professor, R. D. Mussey; Instructor, D. F. Hallenback; Instructor, L. J. Stack, Dr. A. Archibald, Dr. C. P. Kink, Dr. G. F. Muehlig.

Wednesdays, 4:00 p. m.

Diseases of the Ductless Glands, Circulatory Organs and Esophagus.

Professor, H. S. Plummer; Assistant Professor, W. M. Boothby; Dr. W. A. Plummer, Dr. F. A. Willius, Dr. P. P. Vinson.

Thursdays, 4:00 p. m.

Diseases of the Thorax.

Instructor, W. S. Lemon; Dr. H. M. Connor.

Thursdays, 5:00 p. m.

Diseases of the Urinary Tract.

Professor, W. F. Braasch; Instructor, J. L. Crenshaw; Dr. H. C. Bumpus.

Fridays, 4:00 p. m.

Diseases of the Nervous System.

Associate Professor, W. D. Sheldon; Instructor, H. W. Woltmann.

Fridays, 5:00 p. m.

Diseases of the Blood and Blood-forming Organs.

Associate Professor, H. Z. Giffin; Dr. M. B. Bonta, Dr. T. L. Szlapka.

OF GENERAL INTEREST

Dr. F. P. Frisch of Kimball will practice in Gibbon.

Dr. W. Z. Flower of Gibbon will move to Minneapolis.

Dr. L. Murphy of Montevideo has moved to Whittier, Cal.

Dr. C. M. Adkins of Grygla has moved to Thief River Falls.

Dr. H. D. Newkirk of Minneapolis has moved to Anahelm, Cal.

Dr. I. M. Roadman formerly of Onamia has moved to Park Rapids.

Dr. R. L. Laney formerly of Brown Valley has located in Bemidji.

The Society of Clinical Surgery met in Rochester October 10 and 11.

Dr. G. H. Luedtke has returned from service and will again locate at Fairmont.

Dr. H. J. Lloyd has returned from service and will again practice at Mankato.

Dr. J. H. Vogel and Dr. O. J. Seifert of New Ulm have entered into partnership.

Dr. R. C. Radabaugh of Rochester is associated with Dr. L. D. Peck of Hastings.

Dr. Morton P. Morse was married on September 6th to Miss Lydia Oakland of Northfield.

Dr. Edgar R. Sather of Spring Valley was married August 30th to Miss Ragna Molstad.

Dr. J. H. Higgins of Minneapolis is taking a post graduate course in surgery in New York.

Dr. C. A. Lester has returned from army service and has resumed his practice at Winona.

The Upper Mississippi Valley Medical Association held a meeting in Brainerd on August 26th.

The marriage is announced of Dr. Harry E. Banks, Minneapolis, to Mlle. Mercella Pierree of Paris.

Dr. O. S. Watkins of Carlton has gone to Billings, Mont., where he expects to remain indefinitely.

Dr. Fred F. Stocking of Chicago, Ill., has entered into partnership with Dr. F. L. Kling of Milaca.

The Pipestone Clinic has been organized by Drs. W. J. Taylor, E. G. McKeown and W. E. Richardson.

Dr. Archibald has returned to the Mayo Clinic to resume his duties in the Section on General Medicine.

Dr. Carl Robertson has been mustered out of service in the United States navy and will locate at Grove City.

Dr. T. J. Maloney has received his honorable discharge and has opened offices at 1032 Lowry Bldg., St. Paul.

Dr. Charles M. Robilliard has received his discharge from the army and is now practicing in Faribault.

The Alumni Association of the Mayo Clinic and the Mayo Foundation met in Rochester October 8 and 9.

Dr. Henry N. Klein announces his return from service. He has opened offices at 844 Lowry Bldg., St. Paul.

Dr. A. W. Ide of Brainerd will have charge of the new Northern Pacific hospital which is being erected in St. Paul.

Dr. Paul A. Higbee has received his honorable discharge and has opened offices at 221 Myers Arcade, Minneapolis.

After serving in the United States army for two years, Dr. H. V. Hanson has resumed his practice at New London.

Dr. L. H. Van Slyke who was located at Benson before entering the service has returned and will locate at Knapp, Wis.

Dr. C. J. Plonske has received the appointment as oculist and aurist for the State School of Feeble Minded at Faribault.

Dr. Frank B. Mach, who recently returned from service in France, has reopened his office in the Knapp block, Minneapolis.

Dr. J. E. Arnold of Miles City, Mont., and Dr. John Rock of Norman, Okla., will locate in Eveleth, in connection with the More hospital.

Dr. H. S. Plummer attended a meeting of the Pennslyvania Medical Society, where he read a paper on "Indications for Thyroidectomy."

Dr. C. H. Mayo presided at a Public Health Dinner at the Minneapolis Club, given by the Northwestern Division of the American Red Cross, September 24. He spoke on "National Health Problems."

Dr. Adson has returned to Rochetser from a trip to Spokane, Washington, where he read a paper on "The Surgical Treatment of Trifacial Neuralgia" before the Washington State Medical Association.

Dr. Everett K. Geer, who has served for two and a half years in the naval medical corps has received his discharge and returned to St. Paul. He is associated in practice with Dr. H. Longstreet Taylor.

Dr. Moore of the Mayo Clinic, was elected a member of the executive committee of the American Roentgen Ray Society at a recent meeting in Saratoga Springs, New York, where he presented a paper "Roentgenologic Study of Metastatic Malignancy of the Bones."

Dr. Robinson Bosworth has resigned as executive secretary of the Advisory Commission of the Minnesota State Sanatorium for Consumptives. Dr. Bosworth was the first executive secretary of the advisory commission, taking the office in the early summer of 1913. He has been largely instrumental in erecting the fourteen county sanatoria now scattered over Minnesota, and has guarded them through the dangerous period of their infancy. A very graceful and appropriate tribute was paid to him by the Mississippi Valley Sanatorium Association when they

honored him by electing him president at their recent session in Des Moines. This action was all the more significant because it was known that he had resigned his position as executive secretary of the advisory commission to accept the superintendent's position of a large municipal santorium at Memphis, Tenn. Dr. Bosworth's loss will be keenly felt in the tuberculosis work of Minnesota. The County Sanatoria have grown up under his careful supervision and in accordance with his plans. No one can carry them on in the same way and there will inevitably be a period of adaptation to a new leader that will not be passed without some severe jolts. His work in Minnesota has given him a very high place among the sanatorium experts of the country and naturally outsiders have seen and appreciated this more clearly than those nearer at hand.

A third survey of hospital throughout the United States is now under way under the auspices of the American Medical Association. With the end in view of providing a reliable list of hospitals which are in position to furnish a satisfactory interne training. The work in Minnesota is in charge of a committee consisting of Dr. A. W. Abbott, chairman, Dr. John T. Rogers and Dr. Robert Earl. The committee for North Dakota consists of Dr. H. E. French, Dr. N. O. Ramstad and Dr. N. C. Calendar; that for South Dakota., Dr. C. E. McCauley, Dr. S. M. Hohf, Dr. F. A. Spafford, Dr. F. E. Clough and Dr. G. G. Cottam.

The recently created Interdepartmental Social Hygiene Board of the United States government is in need of a number of specially trained men and women to complete its organization. The United States Civil Service Commission has announced examinations for the following positions: Chief of division for scientific research, $3,500 to $4,500 a year; chief of division for educational research and development, $3,500 to $4,500 a year; educational assistant, $2,800 to $3,600 a year; chief of division of relations with states, $3,500 to $4,500 a year; chief of division of records, information and planning, $3,500 to $4,500 a year; supervising assistant and inspector, $2,800 to $3,600 a year; field agent, $1,800 to $3,000 a year. All positions are open to both men and women. Applicants for these positons will not be given scholastic tests in an examination room but will be rated upon their education, experience and writings. Published writings of which the applicant is the author will be submitted with the application. For most of the positions a thesis on one of a number of given subjects will be accepted in lieu of published writings. The receipt of applications will close on November 4. Detailed information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or from the secretary of the United States Civil Service Board at the post office or custom-house in any of 3,000 cities. The law creating the Interdepartmental Social Hygiene Board provides for the cooperation of the war and navy departments and the public health service of the treasury department for the prevention, control, and treatment of venereal diseases. The duties of the board as set forth in the act are (1) to recommend rules and regulations for the expenditure of moneys allotted to states for the use of their respective boards or departments of health in the prevention, control, and treatment of venereal diseases; (2) to select universities , colleges, or other suitable institutions which shall receive allotments for scientific research for the purpose of discovering more effective medical measures for the prevention and treatment of venereal diseases; (3) to recommend such general measures as will promote correlation and efficiency in carrying out the purpose of the act; and (4) to direct the expenditure of certain moneys appropriated by the act.

CONVENTION EXHIBITORS

The exhibitors at the convention of the Minnesota State Medical Association were of unusually high class and their exhibits were in most instances very interesting.

Burroughs-Wellcome and Company, 18-20 East 41st St., New York City, exhibited a number of their high grade products.

Lorin W. Smith, Jr., of the Lederle Antitoxin Laboratories, New York City, who was in the government experimental service during the war and who has recntly located in Minneapolis was in charge of the exhibit. Samples of the various vaccines and serums which are put out by this firm in such convenient form were displayed.

A variety of vaccines were displayed by G. H. Sherman, M. D. of Detroit, Mich., and pamphlets in the treatment of Spanish influenza, ear infections, venereal diseases, furuncles and carbuncles.

Noyes, Bros. & Cutler of St. Paul has a very complete exhibit of their high grade instruments occupying one entire room.

The Standard Medical Supply Company, 1006 West Lake St., Minneapolis, and 207 Lowry Annex, St. Paul, were represented by Mr. Lind and Mr. Deberies and had on exhibition a very pleasing line of surgical instruments and metal cabinets.

W. W. Smith, 827½ Nicollet avenue, Minneapolis, was in charge of the Wm. Meyer Company display and was kept very busy explaining the ins and outs of the interrupterless coil, X-ray tubes and other electro-medical apparatus.

The Victor Electric Co. was represented by H. E. Pengelly, who with his assistant demonstrated the operation of their new high grade apparatus. Their exhibit included some very interesting roentgenograms which served as proof of what their instruments can do.

The new brokerage firm of McKenna, Hunt & Anderson, 827 Nicollet avenue, Minneapolis, composed of Frank McKenna, formerly with C. H. Cirkler as manager of the surgical supplies department; Robert J. Hunt, until recently manager in Minneapolis for the Jno. T. Milliken Co., and Charles F. Anderson, formerly Minneapolis manager of Noyes Bros. & Cutler, had an exceptionally fine exhibit which included the mer-

chandise of Reid Bros., Inc., whose line they will represent locally—this line includes the Davis & Geck sutures.

Upsher Smith, formerly druggist in St. Paul and now devoting his entire time to the raising and commercial production of products of digitalis purpurea displayed one of his plants and explained to those interested the preparation and standardization of his products. His crop this year will enable him to supply the profession with this drug, the careful preparation of which is so essential.

W. A. Preston, representative of the Radium Chemical Company of this territory, had a quantity of radium on display and the canotite ore from which radium is obtained was shown in its original state. The various shaped applicators for superficial and deep radiation were also to be seen.

Paper novelties used in connection with the operating room and sick wards were on display by the Dennison Manufacturing Company of Framingham, Mass.

The Pneumo-Phthysine Chemical Company of Chicago, exhibited for the first time in this territory, their well-known product, Pneumo-Phthysine. This product is used as an outward application where it is desired to reduce temperature and allay inflammation.

Our friend, A. B. Garber, general agent for Minnesota and neighboring states for the Medical Protective Company was present at the convention greeting the company's policy holders.

NEW AND NON-OFFICIAL REMEDIES

During September the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Nonofficiol Remedies:

Abbott Laboratories:
- Cinchophen-Abbott.
- Chlorazene Surgical Gauze.

Gilliland Laboratories:
- Typhoid Paratyphoid Bacterial Vaccine (Immunizing) (Gilliland).

Morgenstern and Co.:
- Cinchophen-Morgenstern.

Van Dyk & Co.:
- Benzyl Alcohol (Van Dyk).

Culture-Lac.—A culture of Bacillus bulgarious in whey, marketed in bottles containing about 4 fluidounces. It is adapted both for internal and external use (see general article on Lactic Acid-Producing Organisms and Preparations, New and Nonofficial Remedies, 1919, p. 155). The date of issue is stated on the label of each bottle. Geck Laboratory, New York (Jour. A. M. A., Sept. 6, 1919, p. 767).

Benzyl Alcohol—Van Dyk.—A brand of benzyl alcohol which complies with the New and Nonofficial Remedies standards. For a description of the actions, uses and dosage of benzyl alcohol see New and Nonofficial Remedies, 1919, p. 52. Van Dyk & Co., New York City.

Cinchophen.—A nonproprietary name applied to phenylcinchoninic acid (Acidum Phenylcinchoninicum, U. S. P.). For a description of the actions, uses and dosage, see under Phenylcinchoninic Acid and Phenylcinchoninic Acid Derivatives, New and Nonofficial Remedies 1919, p. 226.

Cinchophen—Abbott.—The Abbott Laboratories have adopted the name cinchophen for the product accepted for New and Nonofficial Remedies as phenylcinchoninic acid-Abbott (see New and Nonofficial Remedies, 1919, p. 227).

Cinchophen—Morgenstern.—Morgenstern and Company have adopted the terms cinchophen and sodium-cinchophen-water for the products accepted as acid, phenylcinch.—Morgenstern and sodium phenylcinch. Water-Morgenstern (see New and Nonofficial Remedies, 1919, p 227).

Cinchophen-Calco.—A brand of cinchophen. It complies with the standards for Acidum Phenylcinchoninicum, U. S. P. The Calco Chemical Co., Newark, N. J. (Jour. A. M. A., Sept. 13, 1919, p. 837).

Chlorazene Surgical Gauze.—Gauze impregnated with, and containing approximately 5 per cent, of chlorazene. For a description of chlorazene, see New and Nonofficial Remedies, 1919, p. 137. The Abbott Laboratories, Chicago.

Novaspirin.—A compound of anhydro-methylene-citric acid and salicylic acid. For a discussion of the actions and uses of Acid Derivatives of Salicylic Acid (Acetylsalcylic Acid Type), see New and Nonofficial Remedies, 1919, p. 250. The dose of novaspirin is 1 Gm. several times daily. The Winthrop Chemical Co., New York City (Jour. A. M. A., Sept. 27, 1919, p. 987).

PROPAGANDA FOR REFORM

American Made Synthetic Drugs.—P. N. Leech, W. Rabak and A. H. Clark report on the work which was done in the A. M. A. Chemical Laboratory in the efforts to overcome the shortage of synthetic drugs during the recent war. In particular they report on the examination of and the establishment of standards for procaine (novocaine), barbital (veronal), phenetidyl-acetphenetidin (holocaine) and cinchophen, or phenylcinchoninic acid (atophan), manufactured under Federal Trade Commission licenses. They report that the shortage of German synthetics was not felt seriously in most cases because the demand for them had been artificially created, and that the few which were in great need are being rapidly replaced by American made drugs. The report explains how the Federal Trade Commission granted licenses to American firms for the manufacture of German synthetics which were protected by U. S. patents, and how these licenses were issued only after an examination of the firm's product in the Association's Chemical Laboratory had demonstrated that its quality was satisfactory and

equal to that of the drug formerly imported from Germany. It is interesting to observe, the report declares, that of all the synthetic drugs imported into this country from Germany and on which American patents had been issued, the demand was sufficient only to make it commercially profitable to manufacture four of them on a commercial scale, namely, arsphenamine (and neoarsphenamine), barbital (and barbital sodium), cinchophen and procaine. The chemists caution that, in view of the agitation to found an institute for cooperative research as an aid to the American drug industry, it will be well for the American medical profession to be on its guard against new and enthusiastic propaganda on the part of those engaged in the laudable enterprise of promoting American Chemical industry (Jour. A. M. A., Sept. 6, 1919, p. 754).

Benzyl Benzoate.—Although the benzyl esters have been known only a short time in medicine, the possibilities of their usefulness in certain fields of practice is becoming apparent. Benzyl benzoate has already been accepted for New and Nonofficial Remedies. The therapeutic applicability of benzyl esters arose from the investigation of opium alkaloids by D. I. Macht. The study demonstrated that opium alkaloids may be divided into two classes: the pyridin-phenanthrene group, of which morphin is the type, and the benzyl-isoquinolin group, to which papaverin belongs. The former was found to stimulate contractions of unstriped muscle, whereas the papaverin-like alkaloids inhibit the contractions and lower the muscle tone. A search for simpler, non-narcotic compounds of the latter which might still act in inhibitory manner on smooth mulculature led to the use of benzyl acetate and benzyl benzoate. Ureteral colic and excessive intestinal peristalsis have been found to yield to the tonus lowering action of these two drugs. Apparently satisfactory results from the use of benzyl benzoate in dysmenorrhea have recently been reported (Jour. A. M. A., Sept. 6, 1919, p. 770).

Iodin Tinctures, Water Soluble.—T. Sollmann has investigated the claim that certain proprietary iodin preparations are superior to the official tincture of iodin and to compound solution of iodin (Lugol's solution). The claim of superiority is based on the allegation that the potassium iodid in the official preparations causes local irritant action. Since the proprietary preparations have been shown to certain free hydrogen iodid, this claim seemed improbable to Sollmann, and he surmised that apparent decrease in irritant effects was due to a lower iodin content of the proprietaries, such as Burnham's Soluble Iodin and Sharp and Dohme's Surgodine. From experiments which he conducted with the various iodin preparations, all diluted to the same iodin strength, Sollmann concludes: The presence of potassium iodid in the official tincture of iodin does not seem to render this preparation more irritant. On the contrary, it s somewhat less irritant to the skin and much less precipitant to protein than the simple alcoholic tincture or the secret and nonsecret "miscible tinctures." The more even spreading and the more rapid coagulation of proteins render the simple alcoholic solution of iodin probably the best for the "disinfection" of the skin, while the delayed protein precipitation of the U. S. P. tincture would probably render this somewhat superior for the disinfection of open wounds (Jour. A. M. A., Sept. 20, 1919, p. 899).

Case's Rheumatic Specific.—More than five years ago, The Journal A. M. A., exposed Case's Rheumatic Specific, the A. M. A. Chemical Laboratory showing that its essential drug was sodium salicylate. Now comes the United States Post Office and interferes with Mr. Case's presumably lucrative quackery by denying him the use of the mails. In recommending the issuance of a fraud order, the solicitor of the post office department declared: "Mr. Case, the respondent herein, is not a physician and has had little opportunity for study along medical lines. . . . He knows nothing of the effect of drugs and he is incompetent to prescribe their use. When he sells one form of treatment for all forms of rheumatism, irrespective of the superinducing cause or causes of the trouble, he well knows that it is mere guesswork on his part—a hit or miss chance of recovery, and when he calls such a treatment a "Specific for rheumatism," and solemnly urges its use as a cure for practically all forms of rheumatism he knows that he is not acting in good faith, and his scheme for obtaining money through the mails by such means should be suppressed. Jour. A. M. A., Sept. 13, 1919, p. 852).

The Lucas Laboratory Products.—The products put out by the Lucas Laboratories, New York City, are for intravenous use, and the method of exploitation indicates that the concern is less interested in the science of therapeutics than in taking commercial advantage of the present fad for intravenous medication. The composition of the products is essentially secret, which in itself should be sufficient to deter physicians from using them. Even the hieroglyphics that used to be palmed off on the medical profession by nostrum exploiter under the guise of "graphic formulas" are outdone by the "formulas" of the Lucas Laboratories: "'Luvein' Arsans (Plain)" is said to be: "Di hypo sodio calcio phosphite hydroxy arseno mercuric iodide." The first part of this "formula" might stand for sodium and calcium hypophosphite. The remainder is meaningless except that it suggests (but does not insure) the presence of arsenic and mercury iodide. "'Luvein' Arsans, Nos. 1, 2 and 3."—"Meta hydroxy iodide sodio arsano mercuric dimethyl benzo sodio arsenate, di oxy sodio tartaria sulpho disheuyl hydrazin." Who can venture even a conjecture as to the possible significance of this? The proposition offered to physicians by the Lucas Laboratories, Inc., is an insult to the intelligence of the medical profession. Physicians should heed the warning of the Council on Pharmacy and Chemistry that intravenous

therapy should be employed only when most positively indicated.. Further, because of the inherent danger of intravenous medications, physicians should use the products of firms of unquestioned scientific standing only (Jour. A. M. A., Sept. 20, 1919, p. 927).

Case's Rheumatic Specific.—The post office authorities announce that the fraud order against Jesse A. Case has been revoked because Case has agreed to discontinue the sale of his Rheumatic Specific (Jour. A. M. A., Sept. 20, 1919, p. 928).

Secret Remedies and the Principles of Ethics.—There are on the market today and used by members of the American Association, dozens, yes scores, of widely advertised proprietaries that are, to all intents and purposes, secret. The physicians who prescribe them do not know and cannot know what they are giving their patients. On this point Section 6, Chapter II, of the Principles of Medical Ethics of the American Medical Association says: ". . . unethical to prescribe or dispense secret medicines or other secret remedial agents, or to manufacture or promote their use in any way." The inherent and basic reasonableness of the various requirements of the Principles of Medical Ethics needs no exposition or defense (Jour. A. M. A., Sept. 27, 1919, p. 902).

The Direct Sales Co.—The Direct Sales Co., Inc., Buffalo, sells its drugs to physicians by mail, and features a "profit sharing rebate." The concern has guaranteed its products to be in accordance with the Food and Drugs Act and to be equal, if not superior, to any on the market. One of the Quarterly Bulletins of the State Board of Health of New Hampshire, issued last year, announces that the following preparations of the Direct Sales Company were found substandard: "Tablets salicylic acid, 5 grains (1.72 grains found); Tablets acetylsalicylic acid, 5 grains (2.31 grains found); Tablets acetanilid, 3 grains (1.88 grains found); Tablets codein sulphate, 1/3 grain (1/15 grain found); Tablets nux and pepsin No. 2, claiming pepsin 1 grain, extract nux vomica 1/10 grain (found to have a gross average weight per tablet of only 1.17 grains, 0.54 grain of which was represented by sugar and other medicinally inert material; Tablets Infant's Anodyne (Waugh) showed serious discrepancy from formula." Subsequently the federal authorities examined the products of the Direct Sales Company, and Notice of Judgment No. 6193 describes cases of adulteration and misbranding of some of the drugs put out by the Direct Sales Company (Jour. A. M. A., Sept. 27, 1919, p. 1001).

PROGRESS IN MEDICINE AND SURGERY

SPRING HAY FEVER; ITS CAUSE, PREVENTION AND TREATMENT: William Scheppegrell, M. D. (New York Medical Journal May 10, 1919) in a short but clear article deals with this ever alluring subject from all its phases, dividing the condition into four types. 1. Fall hay fever most common and occurring in August and September; 2. Spring Hay Fever occuring in May and June; 3. Spring-Fall hay fever combining type 1 and 2 and; 4. Perennial Hay fever in which attacks occur at other season. Analyzing the periods in which the symptoms occur and from pollinometric records the pollens from both trees, plants and grasses are important etiological factors. As a means for prevention weed control is suggested and while change of climate or residence is the best for relief or cure this cannot always be done. In summarizing the course of treatment the writer includes exercise with sea baths, diet should be light in foods rich in protein avoiding high seasoning and alcoholic drinks; vegetables and fruits are beneficial but in certain cases the individual should avoid those toward which there is any idiosyncrasy. Surgical methods are of no value. Constitutional treatment consists in the administration of calcium lactate gr. XV three times a day after meals well diluted; as for local treatment a weak solution of cocaine with epinephrin is dropped into the nares and a menthol oil spray. Active immunization with extracts of the pollen to which the patient is found to be sensitive given in graduated doses. In the event of a marked hay fever attack during treatment an autogenous vaccine is injected.

In conclusion the author states that with the treatment thus described in a series of 707 cases which included spring, fall and combined forms of hay fever there were seasonal cures in 49 per cent, improvement in 40 per cent and satisfactory results in 87 per cent; 4 per cent showed no perceptible improvement and 7 per cent of the cases discontinued treatment. GEORGE C. DITTMAN.

OXFORD LOOSE LEAF MEDICINE: Volume I of the "Oxford Loose Leaf Medicine" is at hand in the so called "advanced stages."

This type of monographic Medicine promises to be unique and unusually useful. It is too early to predict what the more practical later volumes may bring forth, but certainly there has been a splendid beginning. To many of us who do most of our reading from current journals and monographs, the idea of buying another system of Medicine after our past experiences has seemed rather remote. This new one, edited by our own Professor Henry A. Christian and Sir James MacKenzie, may prove to be the favorable exception.

In the fact that each collaborator presumes to write only upon the subject he is particularly conversant with, we may assume that his product will not be a compilation or that he will permit his acknowledged authority on one subject to entitle him to an equally authoritative opinion on many others. The opinion of an attorney very well versed in the trial of cases entailing the use of medical testimony is worthy of consideration in the weigh-

ing of authorities. He states that the medical witness shows poor foresight in ever admitting that he considers or follows the treatment or procedures of any man as authoritative in a particular subject; because while he might consider the author as an authority, broadly expressed, he would not wish to hold himself as restricted to the use only of the author's method, or to hold for his guidance all of his expressions. This must be plain if we are to retain our individuality, and medical men can rarely be accused of showing a lack of personality in their work.

The introduction to Volume I is written by Christian in his usual clear, pointed and well co-ordinated manner. He has followed the trend of Medicine away from the anatomico-pathological standard to that of pathological physiology, but still regrets, with many other excellent teachers, the tendency to get away from private autopsies. This would tend to show his feeling that the basis of medical teaching must still remain a sound drilling in the principles of pathology.

MacKenzie discusses the future of Medicine, and rather well exemplifies the principle that a man cannot be an authority on too many subjects. A man who has developed himself largely through his own efforts and alone we might naturally expect to show a tendency to dogmatize on the advantages accuring from others doing likewise. On this point he decries in many respects the modern tend to specialism, and feels that the general practitioner must be broadened and amplified and that his observations must be made the basis of more original research, in contradistinction to the more seclusive type of the laboratorian working apart from the direct problems arising in daily practice.

The article by E. V. McCollum on the part played in diet by food substances of an unknown chemical nature should be read by every medical man. This is a very fair summary, in a very readable form, on a phase of dietetics usually made very obscure. His analysis of the conditions dependent upon the development of Beriberi is of particular interest to American physicians because of the light this interesting disease throws on other so-called "deficiency" diseases. The reader will profit greatly by reading his summary, which is short and very much to the point. He does not think that pellagra or scurvy, for example, are truly deficiency diseases.

Rather lengthy sections deal with climatology and hydrotherapy. These articles will no doubt bring great cheer to the physician practicing salubriously in our numerous regional resorts. Just as with the article on Historical Medicine, one will get more from Osler's discussion than from these men so full of their subjects. Nothing quite so charming has come from Osler's pen since he gave to the public in 1906 his well known Aequaninitas. The same may be said of Camas and his Councils and Ideals.

Hewlett, in a most excellent resume, dislikes the term "pathological physiology," but proceeds to use it just the same. In this article a rich experience, with evidently an amazing knowledge of the literature that is worth while, combined with a simple, easy expression, has enabled him to assemble much that has appeared fragmentarily in our literature during the last decade. In this the reader is made familiar by forceful examples, with the great advance in methods of function estimation, hinted at by Christian in his introduction. This article and others must be read to be appreciated. It must be the intention of a book review to elicit interest and stimulate others to read. So let it be.

E. L. Tuohy.

COURSE AND PROGNOSIS OF EXOPHTHALMIC GOITRE: Israel Bram (Archives of Diagnosis. Vol. 11 No. 3) points out that a cure of this disease must be considered from the standpoint of subjective symptoms only, as the entire body, particularly the nerve and vascular system undergo irreparable changes.

While statistics go to show that death results from this variety of goitre alone in about 12 per cent of cases within a period of six months to six years, the percentage must be about double to include the deaths caused indirectly by this disease. Myocardial degeneration with valvular incompensation, tuberclosis, insanity, myxodema, cachexia strumipriva, (from complete throidectomy), tetany and diabetis may coexist or supervene. Certain factors may influence the course of this disease.

As a rule the male seems more severely affected than the female. The nervous and poorly nourished individual and those with poor digestions naturally are the least favorable cases. Some cases are inherently more acute in their course than others. Large thyroids produce unfavorable symptoms. Pregnancy is generally an unfavorable co-existing condition as nutritional demands are thereby increased. Spontaneous abortion or that caused by drug administration must be considered. The social condition of the patient and the co-operation of the patient and family are very important factors. The earlier the diagnosis and institution of treatment the more favorable the outlook.

These patients are often diagnosed incipient tuberculosis, neurasthenia, nervous indigestion, cardiac neurosis or even diabetes.

With the mortality of thyroidectomy reduced by expert operators from twenty or thirty per cent to as low as four or five per cent surgical statistics show improvement or cure in a considerable per cent of operated cases.

Mere improvement is insufficient to compensate for the operative risk undergone and resulting scar. "Surgical statistics do not go beyond the first few months or a year and are incapable of presenting evidence leading to proof of complete surgical cure of exophthalmic goitre." Cases with no return of symptoms occurring in one or two years are natural

cures or got well in spite of operation. Surgery is a failure without accompanying non surgical treatment.

From a theoretical standpoint of the etiology surgery is not the logical procedure. The thyroid is only one of the endocrine glands producing the symptoms. The parathyroids, thymus, suprarenals, pituitary and sexual glands are also involved and even the spleen, pancreas, carotid and pineal glands are not without fault. In general, surgery is only indicated for pressure symptoms or malignancy.

With few exceptions the cure of exophthalmic goitre can be accomplished by proper diet, hygienic, medicinal and psychotherapeutic measures. The service of a proper attendant and favorable social surroundings which include family visitors and physician are highly essential. There are few conditions in which psychotherapy plays a more important part.

Roughly speaking a case must be treated for a period corresponding to the duration of the illness. Persistence on the part of the physician as well as the patient is absolutely essential and there is no more insidious influence than the fear of an operation continually haunting the patient.

Every individual case must be considered separately as regards home or hospital treatment. As a rule home treatment is best as the removal of a patient to the strange environment of an institution only aggravates the nervous conditions.

C. B. Drake.

ONE ASPECT OF SYPHILIS AS A COMMUNITY PROBLEM: Newcomer, Richardson and Ashbrook (Amer. Jour. Med. Sc., August, 1919.) in addition to the sociological aspect of the problem present some interesting data of clinical value from their large dispensary experience.

Salvarsan in full doses is given once a week and a Wassermann after each 7 doses. Mixed treatment given along with intravenous therapy. They give salvarsan by the gravity method using funnel and rubbed tubing, the needle being allowed to rest on the arm and not held in place by an attendant. The solutions are quite dilute—allowing 50 cc. to each 0.1 gm. of salvarsan.

Results of treatment:—Of 26 patients who have had 20 or more doses the following results were obtained: first, marked improvement in the physical condition early in the course of treatment in most cases. Second, wide variation in the Wassermann reaction—occasionally being negative or weakly positive but with all remaining essentially positive. Except in patients with early chancres there were none having less treatment (i. e., 20 or more doses 606) who became permanently negative.

Their conclusions are that either syphilis is very difficult to cure or else their method of treatment was not the most efficacious.

In another group of 20 cases who had more than 10 doses of salvarsan at fairly regular and continuous weekly intervals very little accomplished as far as the Wassermann test was concerned. Not only did they retain a positive Wassermann but they usually returned within a year with fresh symptoms, provided they stopped treatment at this stage.

Of 18 cases with chancres who received 10 or more Salvarsans seven became probably permanently Wassermann negative. The remaining eleven belong to the same class as the treated cases above referred to.

Conclusions:—The treatment of syphilis must be extended over a considerable period of time if efficient results are to be obtained.

The authors have changed their plan of treatment because of the discrepancy between their results and those of other syphilographers now giving 6 doses of salvarsan at week intervals followed by 10 weeks of mercury treatment—these periods to be alternated until a permanently negative Wassermann is obtained.

Their results in pregnancy are interesting enough to report. In every case the patient gave birth to an apparently normal child (Wassermann negative) even though the mother might still remain Wassermann positive. The condition of the mother showed improvement.

As to prevention of reactions following the giving of salvarsan; an empty intestinal canal helped in only a few cases, the best results being obtained by the slow administration of the drug, i. e., 10-15 minutes.

In discussing the toxic nitroid crises and deaths from different brands of 606, they hase used Metz salvarsan, arsenobenzol, Poulnec Fieres and arsenobenzol from the Dermatological research laboratories of Philadelphia and have had no deaths. They think these toxic relations due to some, as yet undertermined factor.

As to the type of antigen for making the Wassermann reaction the authors feel that the cholestralized antigen gives more positives than any other antigen and is, therefore, safer to use as a guide to treatment.

C. N. Hensel.

RESTORATION OF THE URETHRA BY MEANS OF BAER'S MEMBRANE: Joseph E. Adams (Brit. Jour. Surg., April, 1919). reports a case of gunshot wound of the urethra. A young soldier had received a wound by a shell fragment which entered through the perineum. Five months later on examination it was found that the urine was voided through a fistula behind the scrotum. Through this opening a catheter could be passed into the bladder. A sound could be passed a distance of one inch into the urethra from the meatus. In other words the urethra was practically destroyed for a distance of five inches.

At operation the five inch gap was bridged by means of an artificially prepared membrane—5¾ inches in length. The artificial urethra was slipped over a catheter and then the catheter and membranous tube were passed through the meatus into the gap and the tip of the catheter into the urethra.

The two ends of urethra were dissected free for about an half inch, the edges were freshened for the application of the sutures and the artificial urethra ends were inverted and secured by means of several catgut stitches. A flap of soft tissue from the floor of the wound was next dissected up from each side of the floor of the wound. Interrupted catgut sutures approximated the edges over the artificial urethra.

The bladder was now filled by means of the catheter in situ and a supra pubic drainage was instituted. The post-operative course in this case was interesting. For eleven days all urine drained suprapublically. Only slight leakage of urine occurred in the perineum. In twelve days the supra pubic drain was removed. Eighteen days after the operation the catheter in the urethra was removed. The end result in the case was excellent, sounds from No. 18 to 22 being passed by the patient himself and micturition being quite normal. G. GEIST.

CRITICAL REMARKS ON THE RADICAL TREATMENT OF EPIPHORA: A Wiener (Arch. of Ophth, Vol. XLVIII, No. 4) holds it to be self evident that where many old remedies are suggested and new methods devised for the relief of a pathological condition, treatment on the whole is far from satisfactory. This is particularly true in regard to epiphora.

Not infrequently failure to relieve a simple case lies in a failure to recognize the etiological factor giving rise to it. The accessory sinuses as a pathological entity are unquestionably the cause of the worst cases of epiphora. That one-third of the cases of ulcus serpens are due to diseases of the tear sac emphasizes the importance for a thorough eradication of this condition.

Methods that may be instituted for the relief of epiphora has given rise to much thought even so far back as the Ancients for Galen and Celsus were firm in their believe that a direct communication between the nose and the sac might be surgically established in excessive tearing. In later years Langier and Folz suggested that an outlet from the sac might be made via the antrum. The first marked advance in this connection was instituted when Toti in 1904 devised an operation which far surpassed all others because of its simplicity of performance and results attained. Under general anesthesia the sac and lacrimal fossa are exposed. From this fossa an oval piece of bone extending from the post-lacrimal crest downward as far as the lacrimal duct is resected. The inner wall of the sac and the nasal mucous membrane corresponding to the opening in the bone is then removed. Light tampons were placed throughout the wound and the nose and the skin sutured. Occasionally the middle turbinate was resected or its anterior end removed.

Other methods instituted for the treatment of this condition from without the nasal cavity are as follows: Hess advised permanent sounds; Koster, permanent drainage by means of a silk suture moistened with nitrate of silver; Tartuferi, a slitting of the upper canaliculus and internal palpebral ligament, curettage of the sac and its treatment with sounds and antiseptic solutions.

Then the intranasal operations must have their inning with the sacrifice of tissue and probing recommended by Polyak, Killian and Passow. A great disadvantage in this form of treatment was its long-continued after treatment. Guital placed decalcified bone tubes in the wound following the opening and curettage of the sac; he met with failure. Zimmerman supplied prothesis for the sac, a method condemmed by both Kuhnt and Schirmer. Kuhnt, Czermak and Axenfeld advocated the extirpation of the sac through a cutaneous incision, a method that has met with general acceptance although it unquestionably offers certain disadvantages; a natural passageway for the tears no longer exists and as a consequence the epiphora which remains while only slight at times may become excessive, in certain cases being uncontrollable even by the removal of the accessory tear gland.

It will be admitted by most ophthalmologists that probing of the lacrimal passages for the relief of epiphora is a painful and on the whole a most unsatisfactory procedure. According to the author but two methods remain to accomplish the desired end namely, extirpation of the sac or the later procedure dacryorhinocystotomy. In nine-tenths of the cases in which actual stenosis of the nasolacrimae duct exists probing is a useless procedure.

Wiener prefers extirpation of the sac, in progressive cases of trachoma with sac complications, in tuberculosis of the sac and in patients either young or old in years with a diseased sac resulting from progressive nasal diseases. Where a cataract extraction is contemplated although a chronic purulent dacryocystitis be present the removal of the sac prior to the extraction is to be recommended. For the past three years the author has been interested in the operation which establishes an opening communicating between sac and nose; either the extranasal route of which the Toti operation is the representative one or the intranasal route as practiced by Polyak, West, Mosher and Yankauer. Wiener holds that the intranasal operation is the more difficult to perform and accomplishes no better results than the Toti procedure if skillfully executed. The Toti operation offers the advantages; one has at all times a clear view of the field of operation; there is no danger of entering the orbital cavity, antrum or intracranial cavity, a possible calamity mentioned by intranasal operators.

The Toti operation is performed by the author in cases of chronic mucopurulent dacryocystitis, ectasia of the sac, recurrent phlegmonous inflammation, and fistula all of which had a demonstrable stenosis at the neck of the sac or below it. It gave quick relief as regards catarrhal symptoms. The epiphora which rapidly disappeared returned after a longer or shorter period was soon relieved after a short treatment with probes. The operative failures were those in

which there has been extensive slitting of the canaliculi and probing over a prolonged period. The operation offers the disadvantage that some patients will blow secretion from the nasal cavity into the sac. The external scar after six weeks is scarcely perceptible and is not an argument against the external route as held by many.

PAUL D. BERRISFORD.

LIFE EXPECTANCY OF PATIENTS FOLLOWING OPERATIONS FOR GASTRIC AND DOUDENAL ULCER: (Paper presented before the American Surgical Association, Atlantic City, June, 1919.) Balfour states that life expectancy is the major consideration with the patient, particularly in diseases of the gastrointestinal tract for which operation has been carried out. The records of the Mayo Clinic have recently been made use of by the Actuarial Society of America under the direction of Mr. Arthur Hunter who determined, as accurately as possible, the life expectancy of persons who have been operated on for gastric and duodenal ulcer.

A study was made of the 2431 patients operated on in the Mayo Clinic between the years 1906 and 1915; it is remarkable that of this group of cases, the Society failed to trace only 108. The study was made without any regard to the type of operation done. It shows first, that the operative mortality from all causes in 545 cases of gastric ulcer in which operation was done during this period was 4.5 per cent, while in 1684 cases of duodenal ulcer the operative mortality from all causes was 2 per cent. Gastric ulcer carries, therefore, twice the operative risk of duodenal ulcer.

The Association's investigations of the mortality in the years after operation show the following facts:

Gastric Ulcer.—Five hundred twenty-one patients were under observation on the average of 3.6 years, and in that time 88 (17 per cent) died from all causes.

Duodenal Ulcer.—One thousand six hundred fifty-one patients were under observation on the average of 3.4 years, and in that time 85 (approximately 5 per cent) died from all causes.

Gastric and Duodenal Ulcer.—Ninety-one patients were under observation on the average of 3.8 years, and in that time 9 (10 per cent) died.

Mr. Hunter's first observations on these statistics are as follows: "The fact that 17 per cent of those operated on for gastric ulcer have died within an average period of observation of 3.6 years, and the fact that 5 per cent of those operated on for duodenal ulcer have died within an average period of observation of 3.4 years, are in themselves significant. While we cannot tell how many lives have been saved by reason of operation for duodenal ulcer, it may safely be stated that the survival for three and a half years after the operation of 95 per cent is a high tribute to surgery. With such a serious condition as gastric ulcer, a death rate in three and a half years of 17 per cent of those operated on appears to be low. While I cannot prove my statement, I believe that a much larger proportion of persons would have died but for the operation, and that many years of life in the aggregate were saved through surgical treatment."

The chief point of importance in these statistics, however, is gained by comparing the mortality figures of a group of patients subjected to operation for gastric and duodenal ulcer with a group of the general population corresponding in age and in sex.

TABLE 1.

Gastric Ulcer

Deaths in group of 521 persons operated on.

Following operation	Deaths
First year	26
Second year	21
Third year	11
Fourth year	7
Fifth year	7
Sixth year and subsequent	6
	88

General population group of 521 persons with like distribution as to age and sex observed during the same period of time.

Observation	Deaths
First year	8.2
Second year	6.5
Third year	4.9
Fourth year	4.1
Fifth year	3.0
Sixth year and subsequent	5.6
	32.3

The statistics show that the death rate of a group of persons following operation for gastric ulcer is four and one-third times as high as that of a group of the general population of similar age and sex. In the second year the death rate is three and one-fourth times as high, and in the later years it is still less. The death rate of patients operated on for gastric ulcer, as determined by the statistics of about three and one-half years, was two and two-thirds times the death rate in the general population group.

TABLE 2.

Duodenal Ulcer

Death in group of 1651 persons operated on.

Following operation	Deaths
First year	22
Second year	20
Third year	9
Fourth year	10
Fifth year	11
Sixth year and subsequent	13
	85

General population group of 1651 persons with like

distributions as to age and sex, observed during the same period of time.

Observation	Deaths
First year	24.0
Second year	18.6
Third year	14.3
Fourth year	11.2
Fifth year	8.3
Sixth year and subsequent	16.7
	93.1

The death rate of a group of persons in the first two years following operation for duodenal ulcer is only that of a group of general population, and after the second year the mortality is actually less than in the general population group. These statistics illus- very strikingly the fact which has always recognized by surgeons, namely, that gastric ulcer is a much more serious condition than duodenal ulcer, not only from an operative standpoint, but from a standpoint of after-results, and that the patient with a gastric ulcer shows, as a rule, much more evidence of impaired general health than the patient with duodenal ulcer.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

Sterility in Women. Giles. Oxford Medical Press. $4.00.

Venereal Diseases. Browning and Watson. Oxford Medical Press. $6.50.

Members of the Maimed. Keith. Oxford Medical Press. $6.50.

Trench Fever. Byam. Oxford Medical Press. $4.25.

Surgical Aspects of Typhoid and Paratyphoid Fevers. Webb-Johnson. Oxford Medical Press. $4.50.

Psychoses of the War. Marr. Oxford Medical Press. $6.50.

Medical and Surgical Aspects of Aviation. Anderson. Oxford Medical Press. $5.00.

War Neuroses and Shell Shock. Mott. Oxford Medical Press. $6.50.

The Nervous Heart. Wilson and Carroll. Oxford Medical Press. $2.50.

MILK. By Paul G. Heineman, Ph. D. W. B. Saunders Company, Philadelphia and London. $6.00.

This is the most portentous work on the subject of milk that we have yet seen. Each chapter is complete in itself and each is followed by a bibliography.

The first chapter deals with historical facts in relation to the earlier uses of milk, and milk products and is of intense interest. Then follow chapters on the Physiology of Lactation. The Physical Properties of Milk and General Chemistry, which chapters are extremely well written and show the author to be one who knows his subject, even to the minutest detail.

The chapter on The Physical and Chemical Examination of Milk is one of the most extensive and covers every phase of laboratory technique.

Adulterations of milk receive attention and methods of detection of various adulterants are described at length.

Two chapters are devoted to the micro organisms in milk.

The bacteriologic examination of milk is well covered and milk-borne infections is completely reviewed. The author's contention that under modern conditions, one remedy only exists. Efficient pasturization, pp. 147; admits of no argument.

Fermented milk, certified milk, pasteurization, the control of milk supplies and the economic aspect of milk production, are all treated in a most exhaustive manner.

Milk in its relation to infant feeding is most interesting to the Pediatrician. This chapter written by Drs. Abt and Levinson of Chicago, contains much valuable information and is worthy a careful perusal.

The final chapter deals with milk from other Mannuals.

As a whole the book is a veritable mine of information and to those interested in milk it will be read with pleasure and no little profit.

The author's wide and varied knowledge of his subject, shows itself in every chapter, and the delightful style adopted renders the book doubly attractive.

An excellent index makes reference to the text a very easy matter and the work is gotten out in the excellent way one expects from the Saunders press.

J. T. Christison.

PLASTIC SURGERY. By John S. Davis, Ph. B., M. D., F. A. C. S. P. Blakiston's Son & Co., Philadelphia. $10.00.

This volume of nearly 800 pages is the best compact treatise on plastic surgery it has been our privilege to review. It is interesting historically as well as thoroughly modern. The text is complete, the illustrations and diagrams distinct, bibliography, references, index, paper and print all that could be desired.

Any one engaged in plastic surgery should have this book and make use of it.

H. J. O'Brien.

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ORIGINAL ARTICLES

RECONSTRUCTION IN MEDICAL EDUCATION.*

George Douglas Head, B.S., M.D.,

President's Address, Minnesota State Medical Society.

War costs a nation not only the blood of its stalwart young men and the treasure of the state, but also brings in its trail a disorganization of all the organic elements of society. History discloses the fact that institutions of higher learning have not escaped its destructive force. While a period of war preceded that mighty intellectual revolution which culminated in the organization of the first great university at Paris and its contemporary at Bologne in the twelfth century, the French Revolution tore down much of the educational structure, which had through the intervening centuries been erected, and many of the old European universities perished or went into decay.

The history of education in this country bears witness to the destructive effect of the Civil War upon our colleges. A lack of student body, faculty, and funds compelled the closing of doors of most of these institutions. A few of the oldest and best endowed, such as Yale, Harvard, and Princeton were able to maintain their courses of instruction.

The devastating effect of the World War, just closed, among European institutions of higher learning is too well known to require consideration at this time. Profiting by the sad experiences of our Allies and the Central Powers, the United States, soon after war was declared, attempted to keep the young men in the colleges by providing military training through the Students Army Training Corps. Likewise in the medical schools, the inducements offered to the students to remain at their work under government supervision, in order that the country and the army might not be entirely cut off from a supply of physicians, should the war be continued over a number of years, operated in a most beneficial way to retain a part of the student body in the class rooms, laboratories, and hospital wards.

These measures, together with the short duration of the war, prevented the complete demoralization of our system of higher education. Our universities, colleges, and professional schools have suffered, but no disorganization has occurred, and these institutions are now slowly recovering from the blow dealt them by this great calamity in human history. The time is, therefore, most opportune for the examination of the present status of medical education and for reconstruction without confusion, provided changes are demanded by the experiences of the war, and an analysis of conditions discloses faults which should be remedied.

I wish to join forces with those men who believe that serious defects exist in our methods of medical instruction. My twenty years experience as a medical teacher, my close association with the graduates in medicine of recent and former years, and my observations in military service have led me to this conclusion.

The work of medical schools must be judged by the type of medical man produced. The graduates serve as a mirror in which are reflected the good and bad elements. A study of the subject cannot be approached with profit from any other angle. Medical schools differ in the character and type of man graduated. Some institutions pay more attention to the preparation of men as medical teachers and investigators. This is the aim of the best endowed schools. On the other hand, medical schools supported and controlled by state gov-

*Presented before the Minnesota State Medical Association Meeting at Minneapolis, Oct. 1919.

ernments endeavor to produce primarily a practitioner of medicine, who shall serve intelligently the people of the state as medical advisor and as public health councillor.

So varying are the fortunes of life and so kaleidoscopic are the changes wrought in the affairs of men, that, in the final analysis, it makes but little difference whether a young man is being prepared for the career of a medical teacher, investigator, general practitioner, or, if you please, a specialist. Certain qualities of mind and heart are essential. He should possess (1) adequate knowledge, (2) an analytical mind capable of weighing evidence and drawing sound conclusions, (3) a love of truth continually urging him to make investigations and record observations, (4) a realization of the limitations of his knowledge, which prompts him to seek by diligent study and post graduate instruction to perfect it, (5) an acquaintance with the art of the practice of medicine secured by close association with men of experience and personal qualifications, (6) a calm and equitable temperament and a large fund of human sympathy, (7) a lofty conception of the ideals of his professional work, which lifts it above the standards of business and civil life.

Are the medical schools of today developing this type of man? If not, why not? If not, what constructive efforts should be made to improve medical instruction? In a spirit of genuine interest and a full knowledge of the difficulties, with a large sympathy for those who are directly associated with the work, I propose to discuss some of the phases of this subject.

The medical student should possess adequate knowledge. In this particular the work of the schools, with some exceptions, is now well done. The graduate of today is a better prepared man and leaves his alma mater with more knowledge than any generation of medical men which has preceded him. A great step forward has therefore been made. He is, however, told too much and permitted to observe and learn for himself too little. The stuffing methods of modern laboratory instruction are, I think largely responsible for it. The elaborate mimeographic copies placed beside the student's microscope, describing in every detail the section of tissue to be examined, or the chemical reaction to be observed are wonderfully efficient, but there is lacking the strong element of the pioneer days, when the student was given a specimen of tissue to study with the emphatic direction, "Here is the section. Tell me what you see," or, "Here is the specimen. Analyze it and tell me what it contains." Elements of strength characterize every pioneer movement, whether men are engaged in a fight for existence upon the western plains, or creating under difficulties an institution for the teaching of medicine. Wherein does the force of such a movement lie? It can be stated in four sentences. First, freedom to act without precedent and on a man's own judgment and initiative. Second, economy of effort which flings aside unnecessary details, tears off the mask of non essentials, and strikes directly at the thing to be done. Third, self-reliance developed by meeting difficulties and unforseen obstacles and overcoming them. Fourth, human sympathy born of mingling with one's fellows and learning the value of "the humanities."

The chief end of medical instruction is not the training of a young man's brain as a store house of facts. He must be taught how to use his brain; to acquire knowledge by the use of his own faculties. What if there are great gaps in his medical knowledge at graduation. These will soon be closed if he has learned the method by which things are learned, if he leaves college with a keen sense of his deficiencies. Our schools of medicine in their struggle for efficiency have been weaned away from the strong factors in the pioneer methods. The student possesses knowledge but he lacks virility and power of growth. The courses cover too wide a field. Much information valuable to know is dragged in but it is nonessential and a refinement. There is some danger in teaching too much. A multiplicity of methods often leads to confusion. The best, most well tried procedures and laboratory tests should be learned. Much good judgment can be shown in this respect when courses are outlined. Accumulated experience to be worth anything in this short life with limited material must be confined to the methods which time has proven of value. It is drill which the student needs in the best method of doing a thing.

Simplify the instruction and utilize the pioneer methods—should be the watchword of the hour in this feature of medical reconstruction.

The medical man should possess an analytical mind and keen powers of observation. Any system of medical education which does not develop these qualities is a failure. I have said that the graduate of today leaves his alma mater with more knowledge than any generation of men which has preceded him. This is true but I wish to add that our system of modern medical education is now creating a type of men with less initiative, weaker powers of analytical reasoning and observation, and the ability to differentiate clearly between fact and theory than any generation of medical graduates which has preceded him in the last quarter of a century. The student in order to possess powers of reasoning must wade through processes of reasoning himself. He cannot simply follow along the paths laid down for him. To develop keen observation, he must be taught to look for himself, to work out his own diagnosis at the bedside, under the helpful guidance of the teacher.

Young men to develop these mental attributes must be constantly in close contact with men possessing to a high degree these very mental qualifications. There is no other way for them to learn. Teachers in medicine are today too far away from their students. Here the difficulty lies. There is too much of the cloistered life of the research laboratory and the administrator's desk to meet the demands of effective medical teaching. It is in the arena of the hospital ward and at the laboratory desk, elbow to elbow with the student, that the real instruction is given, and the real inspiration received. Just as in the pioneer days too much of the instruction was didactic and demonstration was lacking, so in the methods of today a serious danger arises in the delegation of teaching to subordinates. The strong men in our medical faculties are too busy with writing books, too busy with research problems, too busy with administration, too busy with public health propaganda, University extension courses and the like, too busy with everything except the real work in hand, namely developing in the minds and hearts of their students those very elements which only close personal association with great and strong minds can give. The life of the teacher of modern medicine has indeed become a complex one. He must simplify it. Reconstruction in medical education calls for a readjustment of the relation of professor and student.

The medical graduate must possess a love of truth so ingrained in his nature as to make him a natural observer and investigator. We all possess great sympathy in every effort, no matter how feeble, to add to the sum of medical knowledge. No one, much less the writer, would discourage it. We must all admit that, as we look over the last decade, a great deal of energy has been wasted and misdirected in so-called original investigation. It has served to hamper in many medical schools what would otherwise have been very creditable medical teaching. Every student, properly prepared for his life work, should have had interwoven in his course of instruction some simple elementary research problem, giving him an insight into and some knowledge of the methods pursued. The subject of such investigation should arise naturally out of his own mind, as a corollary of work in which he is interested. It should never be thrust upon him as a matter of duty or necessity. The true spirit of research arises out of a love of truth, a burning desire to add knowledge. It is born out of enthusiasm for truth, an inner flame which cannot be put out until the thing is attempted. The lightly undertaken "made to order" brand of research now extant does not meet the requirements which should be required of men working in centers of scientific learning. Much of it is ill-advised, too hastily carried on, published without proper confirmation, and with the evident intent of securing quick scientific reputations or to meet university research demands. In the interest of student, teacher, and the profession at large a serious attempt should now be made to readjust this phase of the work and establish it in the hands of those more competent to direct it along proper lines and under proper safeguards.

The medical graduate should possess a keen realization of the limitations of his knowledge. There is danger for a young man in knowing too much and knowing that he knows it. The medical graduate of today is too well satisfied

with his knowledge. This is one of the serious defects in our present system. He is so well satisfied that he fails to grow, fails to study and further perfect himself. He does not leave college with a feeling that only a beginning has been made; that long years of continued study, enriched by wide experience, are necessary in order to develop himself into a well rounded physician; that to the wisest man in medicine, experience is fallacious and judgment difficult. He much overestimates the value of modern instruments of precision; lacks a conservatism born of contact with men of wide experience; is not teachable. This is a real fault. I am quite sure I am not mistaking the cock-sureness, confidence and intolerance of youth for this self-satisfied attitude. If I am right about it, wherein does the difficulty lie and how can it be remedied? It arises out of the development of medical teaching as a profession. Most men cloistered in the lecture room, study, or laboratory, apart from the broadening influence of the outside world, surrounded by their coterie of students, over whom they wield such absolute authority, tend to become narrow, self-centered, intolerant, dogmatic. It takes a very big man not to be so spoiled by from ten to twenty years in a professorial chair. This attitude of mind becomes infectious. The student absorbs it. His normal, healthy growth is warped and retarded by this mental attitude. The student should leave the university halls with the feeling that he knows very little; that he has only made a beginning; that many competent men in the profession are not teachers of medicine; that real investigation of the highest type and best sort is being done outside of teaching institutions; that there is something to be learned every day from the time he receives his sheepskin until, with dimmed vision and trembling fingers, he examines his last patient.

I well remember a vivid picture which I carry to this day of that grand old man in medicine, Jonathan Hutchinson, whom I saw in London fully fifteen years ago, demonstrating to his class a case of chronic chickenpox, the second of the kind he had ever seen; how he came into his clinic bent with age, with feeble voice, shuffling gait, and trembling hand, nearly eighty years of age, but radiant with scientific interest. After he had given a most interesting clinical lecture upon the features of the case, he turned and introduced his old artist, a man nearly his own age, who immediately sat down at his easel and with his palette and brush began making an oil painting of this rare case. "Ah," I thought to myself, "what a great spirit—still learning, still observing, still producing."

There are good arguments in favor of the all time clinical teacher. He is a scientifically trained man, possesses the research spirit, has usually had teaching experience, has acquired some executive training, and can devote all his time and energy to the work, but he is frequently handicapped in that he usually lacks clinical experience, undervalues the art of professional practice, is likely to be one-sided in his development, is out of touch with the profession and often lacks the human qualities more fully developed in men trained outside the laboratories.

Cowper has most beautifully said, "Knowledge and wisdom far from being one have oft-times no connection. Knowledge dwells in heads replete with thoughts of other men, wisdom in minds attentive to their own. Knowledge is proud that it has learned so much, wisdom is humble that it knows no more."

Young men should leave our medical schools with open minds receptive for every scrap of knowledge which can be obtained from whatever source. There is room for reconstructive efforts in their "bringing up."

The medical graduate should possess a thorough knowledge of the art which we practice and appreciate fully the value of "the humanities." A teacher of medicine, with whom I recently discussed this phase of medical education, made this statement, "At present we are standing up so straight on the laboratory and technical side of medicine that we are falling over backwards." Whatever may have been the defects, and there were many in the medical instruction of twenty years ago, the humanitarian side was given full emphasis. Men and women are not test tubes and retorts. The poorest and most miserable have feeling and emotions, fears and forebodings. Hope cheers them in the hour of dispair. A kind, sympathetic word helps to brave the tortures

of body and mind. Like a musician who skillfully plays upon the strings of his harp, so the physician, whether he realizes it or not, by words and bearings, plays upon the delicate nerve strings of his patient. Cabot has said, "Physicians are born not made." If this is so it is because sufficient pains and effort have not been expended in throwing the medical student in his final years in personal contact with medical men who have learned the art of the practice, practitioners, who have developed through long years of training, the finer qualities of heart, the power of human sympathy, the intuitive sense which detects a delicate situation in the sick room, and by a calming word of reassurance, quiets the patient's fears. One of the greatest living teachers of medicine placed "Hope" as the chief remedy in the armementarium of the physician.

General Munson has recently suggested a series of psychological tests to determine the mental fitness of candidates for entrance into medical schools. I would go a step further and propose that young men about to receive their degrees be examined as to their human qualifications. Do they possess the power of human sympathy? Can they develop a personal interest in the men and women whom they treat? Do they have patience, optimism, and equanimity of spirit?

In the struggle to secure efficiency, the humanitarian side of medical teaching, is being submerged. Medicine is not yet a science. The graduate should leave college with knowledge sufficient to diagnose the disease, and those attributes of soul as well as mind necessary to treat the patient. The old preceptor method of medical training possessed many strong features which must not be lost sight of in the reconstructive efforts to teach medicine.

Not all enter the practice of medicine with the same end in view. To one it may be only a means to a livelihood, to another a path to fame or fortune, to a third a life work by which to best serve his fellowmen. Undoubtedly, most of us have been influenced by more than one motive. The atmosphere in which a young man works out his earlier years determines his professional ideals. The influence exerted by his medical teachers, the view point held up before him by the practitioners with whom he early comes in contact, the example of one or more strong spirits in th profession, who exercise a dominating influence upon his professional development, are the most potent factors.

I cannot help but feel that both in college and outside we are today offering to the young men a poor example. Outside of college there is too much talk about professional incomes. A man's professional success and attainment are too often measured in terms of his earning capacity. This creates in the mind of the young practitioner a commercial ideal. He counts success in terms of dollars and cents. Within the schools, the atmosphere in the wards, the out-patient service, and the laboratories is that of "the day's work," the cold, scientific study of the disease in the man.

Medical teaching is developing more and more into a professional business. Sentiment is lacking, and the student leaves his alma mater deficient in human qualities so essential for the management of the sick. The attempts to secure added reputation as investigators, by public press notices and other business methods, is unworthy of our traditions. Newspaper headlines sometimes published with the portrait of the teacher or investigator, announcing scientific (?) discoveries before the actual contribution has been read, much less confirmed by fellow workers, does not meet the standards of conservative procedure which we would wish to set before our young men. Our views of the ethics required of a noble calling must not give way to the demand of the times to practice these business methods. In this reconstructive period of medical education, consideration should be given to the preservation of the ideals so dear to the heart of every physician, who loves truth, detests sham, and desires to reward real merit.

I have thus far discussed the reconstructive efforts centering in the interests of the undergraduate. No consideration of this subject would be complete without some reference to efforts directed toward our system of postgraduate work.

The war just closed has made great demands upon the knowledge and skill of our profession. Not only have medical men been called upon to care for the common medical and surgical diseases and injuries incident to war, but

specialized skill has been given in orthopedic surgery, brain surgery, traumatic surgery of all kinds, in neurology, psychiatry, sanitation, genito-urinary diseases, medical consultant work, etc. It can truly be said that this war to the medical man who has served has been a postgraduate school of medicine and surgery, including the specialties. A well known pediatrician of this country expressed himself in these words, "The United States owes me nothing. My experience in the army has fully repaid me for all I have sacrificed." The old world Central Powers to whom we were wont to flock for postgraduate work are broken in spirit, disorganized, out of sympathy with our ideals, despised and rejected nations, whom we cannot in our present mood support or fraternize with.

These two potent factors, the taste for a wider scope of knowledge, created by war experiences, and the severance of our relations with the Powers of Central Europe, call for a determined movement upon the part of the profession in this country to create upon our shores great institutions of postgraduate instruction, which shall meet not only our own requirements, but shall attract students from all parts of the world. The University of Minnesota, assisted by the profession of this state, will, I am sure, move forward in the larger development of this work in conjunction with the mighty efforts being put forward in other parts of the country. Postgraduate instruction should be developed along broad lines with separate curricula, special corps of teachers, utilizing all available material. Courses in preventive medicine, sanitary science, training of health officers, and the like should be given the most careful consideration. The instruction should be thorough, attractive, practical. The knowledge which medical men need in their work should be given. Theory, ultrascientific procedures and methods should be case aside. The real meat of medical knowledge should be taught. These are the courses busy practitioners want. We are living in a time of real things. We are seeing eye to eye with a clearer vision than before.

This I fear may seem to you a severe arraignment of modern tendencies in medical education. It is a personal view, frankly and honestly expressed. In the words of Abraham Lincoln, "Upon the subjects I have treated I have spoken as I thought. I may be wrong in any or all of them, but, holding it a sound maxim that it is better only sometimes to be right than at all times to be wrong, so soon as I discover my opinions to be erroneous I shall be ready to renounce them." The subject has been presented in the spirit of helpfulness, not of criticism. The defects are not fixed. They indicate a trend in medical education rather than a settled purpose. They do not exist in all medical schools, nor do all individuals in any one school exemplify them. Proper reconstructive measures instituted and carried out under wise leadership can correct them.

In the great war, which, thank God, has now closed, the physicians of this state have made a noble sacrifice in the interests of humanity and our beloved country. More than three hundred and fifty members of this Association have volunteered under the flag. Almost every medical man in the state has served on local draft boards, aviation examining boards, pension boards, reconstructive aid boards, and the like, with little or no compensation. True to the traditions of our profession, we have given freely and have experienced the joy of self sacrifice for a higher good, the giving, as Lowell has so divinely expressed it to "That which is out of sight, that thread of the all sustaining beauty which runs through all and doth all unite." In the metamorphosis of the civilized state, there is much work for courageous and honest men to do. Reconstructive efforts in medical education are matters of large concern to the profession of this state.

As our profession has sacrificed in the interests of our country, so now let us rededicate ourselves to the noble ideals laid down by the fathers in medicine. The Hippocratic oath emphasizes to the fullest degree the responsibility imposed upon and the sacrifice expected of every disciple of Aesculapius in the teaching of his art. This applies to teacher and practitioner alike. As we practitioners set the example, so will the coming generation of young physicians practice the art. As the teachers of medicine propound and exemplify the ideals of our calling, so will the graduates of tomorrow reflect the force of their example.

INTRACAPSULAR EXTRACTION OF CATARACTS*

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Practically all ophthalmologists admit the advantages of the intracapsular extraction of senile cataract; the operation is being practiced as the best method of extraction of cataractous lenses of certain types. The comparative freedom from iritis and the long periods of reaction during the absorption of retained cortical material is enough in itself to make the intracapsular method appeal to the operator, and the elimination of the possibility of after-cataract certainly is a source of great satisfaction to both the operator and the patient. Days and weeks of time are saved in the convalescence; within a few days the patient can return to work with good vision and with visual acuity that will improve with time instead of becoming less acute. The method is a distinct advantage to elderly persons with whom time may be a factor of great importance. Protracted convalescence in a hospital often precipitates a mental depression from which these old people never recover. The physical infirmities they have heretofore hopefully and cheerfully mastered now become manifest and dominant, so that even with improvement in vision they sometimes leave the hospital more helpless than when they entered. While as a rule elderly persons make good patients it is better to confine them to bed as little as possible, and to get them into their homes or into a homelike environment with little delay.

The greater part of postoperative complications arise from retention of lens matter in the chamber, or from delayed closure of the wound because of incarcerated shreds of capsule. It is to the marked advantage of the intracapsular method of extraction that these complications are very much reduced in frequency. Statistics show that the intracapsular method has a smaller percentage of prolapse of vitreous, prolapse of iris, iritis, and total loss than other methods of extraction, and an equal percentage of incarceration of iris, with no discission and no suppuration.

The development of intracapsular operations forms an interesting chapter in ophthalmology and should be reviewed by every surgeon who attempts cataract operations. For many years attempts have been made to perfect a method of extraction which would not leave a corneal scar, which would leave a round black pupil with no capsular nor other debris to obstruct the light. The extraction of the cataract in the capsule was first introduced by Pagenstecher in September, 1863 as a routine operation for senile cataract (Wurdemann). His method was to incise the cornea in the ordinary manner, to perform an iridectomy, and, after entering the spoon behind the lens, to exert pressure on the cornea through the lower lid. Quite as frequently he tried to express the lens by pressure without introducing the spoon, reserving the use of that instrument for cases in which the lens did not readily deliver. He selected patients whose cataracts were hard or hypermature and whom he thought could be kept under control. His vitreous loss is given as 53 per cent.

Modifications of the Pagenstecher operation have been brought out from time to time, advocated, and passed into disuse. The extracapsular method of extraction, as practiced by von Graefe, became the method of choice for most surgeons and for several years the operation was believed to be standardized. Accidents and complications had been considered as reduced to a statistical minimum, that is, losses were assumed to be about 4 per cent in the hands of good operators, and discission of after-cataract was believed to be necessary in from 40 to 60 per cent of cases. The danger of total loss or violent reaction following discission of the after-cataract had been considered liabilities which the patient had to accept; often more than one discission was necessary. Pioneer work in developing new methods of extraction was undertaken by only a few and condemned by most as subjecting the patient to unfair risk. Why should one deviate from an operation that one understands thoroughly to accept a new one admittedly harder to per-

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form and in which danger of loss of sight from complication lurks in unknown and unsuspected places? Enough of the unpleasant happenings accompanying early attempts at intracapsular extraction were known to the masters of the von Graefe and other extracapsular methods to make them very cautious not only in operating but also in accepting the statement of good results achieved by those who from time to time reported cases operated on by the new method. Indeed there was little in these early reports to induce one to take up the method described. It remained for Smith to move the world by his stupendous mass of data and his insistance that he had devised an entirely new method of extraction to shake the conviction of the conservative ophthalmologist that the intracapsular method of extraction is unsafe. By many of our American and British surgeons the method as described was attacked as cruel, brutal, inhuman, unreasonable, and unoriginal. The only thing new about it seemed to be the high percentage of good results reported in a series of cases much larger than that of any other surgeon. To be sure it seemed wonderful, unbelievable, yet the logic of intracapsular extraction went home. That removal of the capsule with the lens is ideal if it can be done without too great risk had to be accepted. We were perfectly willing to admit that the greatest satisfaction and the least uneasiness were experienced when the eye was left clearly rid of all substance that might set up reaction, and that better visual results could be expected. The Smith-Indian operation was difficult to perform, however; it was better suited to the unintelligent, unemotional, easily satisfied nature of the Jullundur who could not read anyway, than to the exacting demands of people of the temperate zones of Europe and America. Then, too, there was little encouragement in the statement of the originator that "the operators outside of India who have not had a special course of training in the manipulative art connected with it, or the operator who has not had such training and whose experience is limited to a hundred cataracts a year or less, will be well advised to avoid this operation."

Very few American operators were doing more than a hundred extractions a year, yet this did not deter a few from training with the master and bringing to our people the advantages obtained by his operation. His pupils, realizing the differences in patients and hospital conditions, were quick to improvise ways to meet the principal objections to his operation, and, so far as I know, no American ophthalmologist is consistently practicing the Smith-Indian extraction in all its details as laid down by Smith. Every detail from cleansing the culdesac to the after care of the patient is claimed by Smith as of his own devising and in all fairness to him should be rigidly followed in cases purported to be done by his method. That it is not followed so consistently is not to the discredit of Smith himself, or to the theory of intracapsular extraction, but to the credit of American surgeons who are ever active in the best interests of their patients and quick to take up that which is proved to be good. The problems of lid retractors, preliminary preparation of the eye, and the first steps of the operation itself were gradually worked out. Lack of an experienced assistant to hold the lids has been met by mechanical retractors and hooks. Irrigation of the conjunctival culdesac with strong solution of mercury salts has been found to be harmless and efficient.

Smith advocated a section ending within the cornea but the limbal section upward with a small conjunctival flap has held its own place as first choice with most surgeons. The section should include a little less than half the circumference of the cornea, and the flap should begin with the section. Better and quicker union is obtained in this manner. "So uniform is the consensus of opinion upon the formation of the section and conjunctival flap that it would not repay us to spend time now on the consideration of details of relatively slight importance" (Parsons).

The question of iridectomy seems to have been settled by Smith's abandonment of the simple extraction and adoption of the iridectomy as a routine procedure. In 1912 Stanculeanu modified his operation by omitting the homatropin instillation and substituting iridectomy (Hansell). In simple extraction prolapse of the iris is a not infrequent complica-

tion that is difficult to deal with and that frequently necessitates an iridectomy or iridotomy later. The question of whether the iridectomy should be done before or after the extraction may be left to the individual surgeon. Its function is the same, namely, to lessen the danger of prolapse of the iris and to lessen the probability of subsequent glaucoma by a free interchange of fluid between the two chambers.

Attempts to devise safer methods of extraction of the lens in the capsule have given rise to the wide variation in technic found in present use. In one of the two earlier methods employed, a spoon or scoop was introduced into the vitreous and under the lens to lift the lens up against the cornea; then, by use of a spoon, pressure was applied to the cornea below the lens border and the lens was skidded through the wound. In the second method, without introducing any instrument into the eye, pressure was applied through the lower lid or directly on the globe at the lower border of the cornea, counter pressure being applied above the wound when the lens did not deliver readily or when the vitreous prolapse was unduly large. During the next few years special instruments were devised to remove the lense by pressure or by traction, or by a combination of these two methods. Among these may be mentioned the cystotome, hook, vectis, "detacher," reclinateur, spoons, glass rods, vacuum extractor, etc.

The Smith-Indian method was by pressure applied to the outside of the globe. Objections to this method, which seem to have been well sustained, are abrasion of corneal epithelium, vitreous coming out at the side before the lens is delivered, and prolapse of the iris. The latter objection was removed by doing an iridectomy. The abrasion of corneal epithelium has been reduced by the use of a delivery hook with rounded side and blunt end, but injury to the posterior corneal epithelium causing striped keratitis still remains a factor in delaying visual acuity in cases in which considerable buckling of the cornea is necessary to express the lens. Injury to the cornea was reduced by first dislocating the lens by use of a reclinateur, and vitreous loss was made much less probable by requiring less pressure than that necessary to rupture the zonula and by the use of improved lid retractors.

In 1910 Knapp began the use of the Kalt forceps to dislocate the cataractous lens, after which he expressed it by the Smith-Indian method. A year later Stanculeanu reported a method of extraction which, after the usual section and iridectomy, was characterized by grasping the anterior capsule of the lens by means of a capsule forceps made without teeth, and designed to hold the capsule without tearing it. The lens was moved from side to side and up and down, thereby rupturing the zonular attachment. The forceps was then removed and the lens delivered by pressure on the globe by the use of a spoon.

Torok noticed the firm grip taken on the capsule by the Kalt forceps and how easily the zonular attachments can be ruptured with it. He stated that if capsule forceps instead of a cystotome is used, often a hypermature cataract with thickened capsule does not rupture, but the zonula gives way and the lens is delivered in the capsule. He imitated this accidental delivery in the capsule by aiding in the rupturing of the zonula by applying intermittent pressure on the globe below the cornea by means of a Daviel spoon simultaneous with side to side movements with the forceps. As soon as the zonula ruptured, the pressure on the cornea became continuous and followed the lens, as in the von Graefe extraction, and the lens was delivered with its lower edge first. There was a loss of vitreous in only two of 37 successful extractions.

Technic of Operation

The Kalt forceps were recommended to me as being well adapted for the removal of the anterior capsule in performing the usual extracapsular extraction, and I began to use it for that purpose. In a few instances the lens became luxated and I expressed it in the capsule with a Daviel spoon after the usual manner. There was no loss of vitreous and the eye healed without incident within a very few days. I then attempted the extraction of the lens in the capsule in selected cases, grasping the capsule with the forceps and making traction as well as side to side movements; I was often

successful in pulling the intact lens through the incision without applying pressure to the globe. However, quite as frequently the capsule ruptured before the zonula gave way or as the lens was being delivered; this delivery could not be classed as an intracapsular extraction. I found that the zonula could be ruptured more easily by applying pressure below the lens by means of a Daviel spoon after the grasp of the capsule was secured, than by means of side to side movements with the forceps. Furthermore, it was evident that the lens could be raised slightly to engage in the wound even before the zonula gave way, thereby preventing the escape of vitreous around the side of the lens. Traction upward or toward the wound was combined, therefore, simultaneously with the pressure on the globe below, care being exercised not to exert sufficient traction on the capsule to rupture it. When the zonula gave way the lens immediately engaged in the wound without turning or "tumbling." Pressure with the Daviel spoon was now made to follow the lens as described by Torok until the lens was slightly more than half through; the pressure was then discontinued entirely. From this point the lens was removed by the use of the forceps alone; thus there was no pressure on the globe after the resistance to pressure was removed by birth of the lens. The iris pillars were then replaced, the conjunctival flap adjusted, and the eye closed in the usual manner.

Soon it became evident that some types of cataract are not well suited to this method of extraction. In general these fall into the classes that have been described by Knapp and Torok. Most of the successful attempts were made on sclerosed lenses; many cataracts that were thought to be best adapted to this method were found to have friable capsules with rather tough zonulas, and the amount of manipulation necessary to express them in the capsule would have been much greater than would be required to open the capsule and remove the soft part of the cortex remaining after the expression of the nucleus by stroking the cornea and irrigating the chamber. Even soft white lenses with tough capsules frequently could not be removed by this method because of the difficulty in grasping the capsule; they should, I believe, be removed by some other method. Also juvenile and traumatic cataracts are not easily removed in this manner.

Discussion of Cases

In the past eleven months 24 of 100 extractions were successfully done by combined expression and traction as described above. The extractions were all in elderly persons, mostly over sixty. The time of development of the cataract varied from six months to more than twelve years. In nine of the 24 cases, the lenses were larger and sclerosed; fifteen were soft, including immature and hypermature lenses and lenses with white fluffy looking cortices. Vitreous was lost in two cases, each time due to a squeeze by the patient before the capsule forceps were introduced. In each the vitreous loss was very small in amount. After the lens was grasped the vitreous receded and did not again appear in the wound. One patient squeezed violently as the forceps was applied, expelling the lens still in the grasp of the forceps, and without vitreous loss. Another had a deeply set eye with extremely small palpebral opening (it would not admit my smallest speculum) with atrophic conjunctiva and obliteration of the fornices from old trachoma and pannus. This patient was an old lady who desired better light perception and insisted on having an operation despite an unfavorable prognosis. As the incision could not be made with a knife it was started by a keratome and finished with scissors. The lens was hypermature and delivered easily without loss of vitreous. The patient was discharged in five days with a well healed wound; six months later she could see to get about without glasses.

The twenty-four extractions by combined expression and traction do not include several extractions in which the capsule was ruptured after the lens had engaged in the wound. This happens because of pressure on the cornea as often as from pulling on the forceps and with either soft or hard cataracts. The collapsed capsule can be removed without difficulty and the chamber irrigated to remove any retained cortex with no more inconvenience than is experienced in doing the ordinary extracapsular

extraction. One patient developed iritis with ciliary injection and pain on the third day. The complication yielded, however, to atropin and moist heat and disappeared by the tenth day. The average length of time which these patients spent under observation after the operation was ten days. Table 1 shows the visual acuity on the first refraction and does not represent ultimate results.

REFERENCES

1. Hansell, H. F.: The Extraction of the cataractous lens in its capsule. New York Med. Jour., 1915, ci, 620-622.
2. Knapp, A.: Report of one hundred successive extractions of cataract in the capsule, after subluxation with the capsule forceps. Arch. Ophth., 1915, xliv, 1-9.
3. Pagenstecher: Quoted by Wurdemann.
4. Parsons, J. H.: Methods of cataract extraction. A critical review of the methods at present advocated. Lancet, 1909, ii, 129-131.
5. Smith, H.: Details of vision of 132 cases of intracapsular extraction of cataract. Arch. Ophth., 1912, xli, 608-614.
6. Stanculeanu, G.: Intrakapsulare Staroperationen. Klin. Monatsbl. f. Augenh., 1912, 1, 527-537. Quoted by Hansell.
7. Torok, E.: Extraction of cataracts in the capsule by a slight modification of the von Graefe method. Ann. Ophth., 1916, xxv, 712-717.
8. Wurdemann, H. V.: The expression of cataract in its capsule. Jour. Am. Med. Assn., 1909, liii, 783.

DISCUSSION

DR. WILLIAM R. MURRAY, Minneapolis: First, I want to congratulate Dr. Benedict upon his modification of the intracapsular method for extracting cataract which he has described. Second, I congratulate him upon his skill as an operator, and third, I want to congratulate him upon his skill in successfully handling a complication which is likely to arise during the course of cataract extraction, whether it is done by the intracapsular or by the extracapsular method of operating. Our object in any cataract extraction, by whatever method it may be, is to obtain the best visual result with the least possible danger of complication to the patient either during or following the operation. The intracapsular method of operating fulfills the first of these requirements for a good cataract operation. There is no question about that when the operation is successful. The intracapsular operation removes the lens and removes the intact capsule of the lens, consequently it should leave a clear black pupil, and avoid the necessity or desirability of a secondary operation afterwards in order to open the pupil through the capsule which may remain as a result of an extracapsular operation. The removal of the lens with the capsule undoubtedly lessens some of the complications which may arise afterwards, such as iritis, or complications due to the presence in the corneal wound of a tag of capsule or lenticular substance which sometimes becomes impacted in the lips of the wound and delays union, and also sets up ciliary congestion and iritis. There is no doubt but what the intracapsular extraction of cataract successfully fulfills the first requirement of the best cataract operation. The extracapsular operation for cataract leaves in a considerable number of cases some capsular substance which may need future needling in order to get good and useful vision. These secondary operations should not be regarded lightly. They are not insignificant by any means, and yet I am inclined to think at the present time, with our present methods of operating, the gravity of a secondary operation has been overstated by some. I do not wish to be understood as believing that these are minor and unimportant operations, but personally I have not seen any bad results from a secondary operation on the capsule. With a secondary operation we can usually obtain very good vision. As a result of that, we have usually considered the cataract operation as satisfactory, and we usually expect, if the case is not complicated before operation, to get good and useful vision. Whether the intracapsular method of operating for cataract fulfills the second requirement of the best cataract operation is a question which I believe is still open. I do not feel that this question at the present time is satisfactorily settled.

When Colonel Smith first published the results of his operation by the intracapsular method and later published a communication along the same line, basing the results upon a number of cataract extractions which we believed at that time to be almost incredible, namely, 35,000 cases on which he had operated, some of our ophthalmologists in this country went to India to see Colonel Smith operate and to receive instruction from him, and we have with us today one of the men who went to India and saw Colonel Smith operate and was instructed by him. Most of those ophthalmologists on their return to this country were enthusiastic over the intracapsular method of operating. Some later became less enthusiastic; some of them modified Smith's method of operating with a view of lessening the possibility of complications and dangers which might occur during the intracapsular method of operating as described by Colonel Smith. Some of these modifications were along the line of improving instruments, such as lid retractors, as devised by Dr. Fisher, of Chicago, which more or less eliminate the chance of pressure upon the eyeball by the lid, which was the great source of danger in this form of cataract extraction; also a source of danger in any form of cataract extraction. Other men modified the operation in different ways, and the opera-

tion described by Dr. Benedict is one of those modifications. In the operation as described by Dr. Benedict the lens capsule is grasped by the forceps and removed by the combined method of traction and pressure upon the external surface of the globe.

DR. J. A. PRATT, Minneapolis: About two years ago we decided to change our technic in cataract operations and try to do the intracapsular operation. At that time we went to the clinics of different men who were doing the intracapsular operation and decided to follow the technic of Dr. Fisher of Chicago. We did this for two reasons. In the first place, Dr. Fisher has lid retractors which give the assistant perfect control over the lids from the beginning of the operation, and are not removed until we are entirely through. The second point is the little needle he uses, so that when the lens is presenting and would not deliver or vitreous presents, you can stick in the needle, rupture the capsule, and deliver the lens, and then you have the eye in the same condition as in the old classic operation.

Dr. Fisher has been trying to put over this operation so that ordinary operators can perform it. In the experience we have had and from what I have seen in our line of work, there is one particular thing a man ought to have, and that is touch. The pressure must be regulated, and that is where the majority of men fall down who attempt this operation, but we find it very successful. We have been careful and it has seemed very easy to us. We have done already forty-eight of these operations, and we have had one loss of vitreous, which is the bug-bear of the operation in this line of cataract extractions. We may have had a very easy run of patients but so far the results have been very satisfactory. In the next fifty cases we may not be so successful. However, we have confidence in the operation. We used the Fisher needle in the first case because we were frightened, but in the remainder of the forty-eight cases we used it only twice more, so you see it is not always necessary to use it.

Soon after we started this line of work Dr. Fisher called attention to the use of kittens eyes so that the technic could be better learned.

We have the pleasure of having Dr. Fisher with us today, and I hope he will take part in this discussion.

I believe this operation is the coming operation. I cannot see why it is not because it is successful, and we have found the Smith-Fisher operation successful in more cases than by our old method of operating. If the operator will go to work and use the eyes of kittens to master the technic, as recommended by Dr. Fisher, he will have very little trouble. Personal equation is a factor, and a delicate, skillful touch is essential. Some men can never acquire that touch.

DR WILLIAM A. FISHER, Chicago: First, I want to thank you all for the privilege of being here at this time. It has been one of the most enjoyable and profitable meetings I have ever attended. Secondly, I want to thank Dr. Benedict for his very carefully prepared paper and also for seeing his beautiful operations today and yesterday. Any of you who saw him operate will class him as I do, a very skillful operator.

Oculists all over the world, so far as I know, have been trying to remove the lens in capsule, but of course, there are difficulties in doing this, and there are also difficulties in getting the lens out after the capsule is ruptured. Some oculists believe that if they are perfectly familiar with the old operation, they will have no trouble, "but such is not the case." I have had my troubles doing the so called classical operation for twenty-five years, and I have had all kinds of complications by this method of operating, and many of these complications are serious. The members of this society may not understand that this is a surgical procedure, and not a special one for the oculist, and more cataracts are removed today in the civilized world by surgeons than by oculists. I believe this society would be more interested if this was a general surgical paper.

Some of you probably do not understand that Colonel Smith of India, is a general surgeon and not an oculist. He published an article in Ophthalmic Record 1913, in which he reported 35,000 cataract operations, and made the statement at the time that he had done more general surgery than any man living. That is a strong statement for a man to make, but Colonel Smith can substantiate it, or it can be substantiated by anyone who would consult the British bookkeeping department at Amritsar, India. He operates 365 days in the year, seldom takes a vacation but works from morning until night, and that is the reason he has done more surgery than any man living. Most of our successful surgeons go to Florida or California in the winter and play golf. "Smith works winter and summer."

Dr. Smith has been teaching the intracapsular operation to surgeons in the northern part of India for many years. They go to him to see him operate and receive instructions from him like surgeons come to the Mayos. Patients come to Colonel Smith from all over India as they come to the Mayos from all over the United States and Canada. Why do they go to Smith? Because they get results, and doctors and patients come to the Mayo Clinic because they get results. Doctors come here from all over the United States and other parts of the world for instruction and the Mayos are only too glad to give it. Patients come here from all over the country; they seem to be glad to come and the doctors are glad to send them.

I am telling you as surgeons that this is a surgical operation and you can do it just as well as the surgeons in India providing you could get the experience. Ninety per cent of the operations for cataract are done in the capsule in northern India by surgeons. A few oculists in India in the large

centers are connected with the universities, but most of the cataract operations are done by the British Army or Civil Service, or missionary doctors.

With reference to the kitten proposition, as suggested by Dr. Pratt, I will say that some of you may not understand that a six weeks old kitten has a cornea eleven or twelve millimeters in diameter, which is about the same size as the patients I saw Dr. Benedict operate upon today and yesterday. The cornea of a kitten is just as thin and just as beautiful to operate on as that of a patient. I am satisfied that if either one of the Mayos could have the privilege of going to India and see Colonel Smith do fifty or more of the intracapsular operations for cataract, and then let him operate after that upon six hundred eyes as Colonel Smith allowed me to do with the particular skill that the Mayos possess, I doubt very much whether they could secure an oculist to do the operations as well as they could do it themselves, but instead they would class the cataract operation as any other surgical procedure and do it themselves.

To become familiar with the technic of the operation you must get an eye the same size as the human eye and the eyes that are adapted to the purpose of developing technic are those of six weeks old kittens. If the Mayos would pay as much attention to kittens as they do to the other animals they have in their animal house, they could with the use of the kittens' eyes teach oculists and surgeons how to operate for cataract by any method. What a weight it would have if Dr. Benedict could teach surgeons and oculists how to do cataract operations without subjecting patients to loss of eyes. The lids can be held away from the eyeball by a lid retractor and a nurse can be taught to do it on anybody, after instilling holocain to produce anaesthesia.

The great bugbear is the loss of vitreous, but loss of vitreous occurs in the old operation as well as in the new, and it happens in the hands of skilled operators.

The excellent article by Dr. Benedict will have great weight and do much toward placing the intracapsular operation in a place at the top where it belongs, and coming as it does from the Mayo Clinic will give it justly added importance.

From every stand, I believe the intracapsular operation for cataract will be the one of choice in the future by all who master the technic.

DR. BENEDICT (closing the discussion): I wish to thank Dr. Murray and Dr. Fisher for their kind remarks in discussing this operation. I have not brought out a new operation. Most of the details of the operation I have described were worked out four or five years ago and may be considered refined steps of both the intracapsular and other methods. There seems to be more or less of a hew and cry about the Smith-India method because a great many men of skill have attempted it and have given it up for some modification. Whether it is due to a lack of skill or lack of experience, or to a departure from the technic as laid down by Smith, I do not know. The operation I have described is a matter of development. Advancement has been made through the efforts of Dr. Fisher, Dr. Green, and Dr. Vail, and others. I think a few more refinements will gradually lead us back closer and closer to the original Smith operation as the method of choice.

A SIMPLE BUT EFFICIENT METHOD FOR THE TREATMENT OF BURNS

Geo. E. McGeary, B. S., B. M., M. D.,
Browns Valley, Minn.

Many new methods for the treatment of burns have been introduced to the medical profession of late years but practically all have been discarded after a few unsatisfactory trials and the surgeon has reverted back to the time honored but inefficient use of carron oil.

The object of this paper is to put in the hands of the practicing physician a simple but highly efficient method of treating burns in which infection is quickly overcome and healing is rapidly instituted.

In October, 1918, Mr. John La Penotiere, pharmacist at the Minneapolis City Hospital, asked me if I would try out a preparation which he had made up for the treatment of burns. The method to be followed was similar to the method used in the application of Abbot's Parresine.

Mr. La Penotiere's preparation is of a waxy consistency with a melting point of 120° Fahrenheit. This is melted over a water bath and kept at 120° Fahrenheit during the application. The can be easily done in the ordinary sterilizer, care being taken to keep the cover of the sterilizer open to prevent the entrance of water of condensation into the vessel containing the paraffin.

The burned area is first gently cleaned with Dakin's solution, the gross particles of charcoal, fragments of burned cloth and other debris being removed with a thumb forceps. The area is then gently dried with sterile compresses. A coating of the paraffin is then quickly painted over the area with a two-inch camels hair brush. A thin layer of sterile sheet wadding of the same shape as the burned area is then applied and another layer of the paraffin preparation is then painted over the sheet wadding. If the sheet

wadding is thin enough, the dressing is held firmly in place, is neat and airtight. The dressing is kept in place more firmly by the application of an ordinary gauze bandage.

The dressing must be re-applied daily until healing is complete, care being taken to first wash the area with Dakin's solution.

In October, 1918, a man 35 years of age, came into the receiving room at the Minneapolis City Hospital with a badly infected second degree burn of the forehead, nose and cheeks, of three days duration. He had been burned by the accidental ignition of a pair of celluloid rimmed spectacles. It had been treated first by a private physician with carron oil.

The above method was used and he was told to report the next day. The second day a layer of pus was present between the dressing and the burned surface. This was washed off with Dakin's solution and a new application of the paraffin dressing was made. On the third day the pus was markedly decreased. On the fourth day the pus was absent but a thin layer of serum was present. Many small islands of skin (pinhead in size) were present over the affected area. These rapidly increased in size until the eighth day when the area was covered by a healthy layer of new skin. On the tenth day the dressing was removed and a thin layer of cold cream was applied. The patient reported again two weeks later. The new skin had almost resumed its normal appearance. The patient was not seen again.

The second patient on whom the new preparation was tried was a man aged 42, a railroad engineer by occupation. While sleping in his home, his bed clothes caught fire from an unknown cause and he suffered second and third degree burns of the chest, arms, neck and face.

The paraffin preparation was applied as described above and the patient admitted to the hospital. The course was the same as in the first case.

The remarkable point about the second case and one which we found to be true in every subsequent case which we treated immediately following the burn, was that although the patient was suffering intense pain when first seen, as soon as the area was entirely covered with the paraffin preparation the pain was almost completely alleviated. Incidentally, pain was an unknown factor in the daily changes of the dressings.

Since then, this paraffin preparation has been used as the routine treatment for burns at the Minneapolis City Hosptal.

The formula for preparing the paraffin dressing is as follows:

1. Resorcinol 10
2. Olei Eucalyptii 20
3. Olei Olivae 50
4. Petrolatum 250
5. Paraffin 670

Melt 4 and 5 together.

Dissolve 1 in alcohol and add to 4 and 5 while latter is hot, to drive off the alcohol. When cool, add 2 and 3.

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EDITORIAL

FUNDAMENTALS OF A MATERNAL WELFARE PROGRAM

Any complete health and social welfare program should include two Public Welfare activities, those of Maternal and Infant Welfare, which are closely related and should be very carefully coordinated. These activities are intimately bound up with the family and concern particularly the mother and child. While these two sub-programs are more or less closely related to all the other public welfare work, they have more points of contact with each other than with the rest of such activities. From an administrative viewpoint these two activities could be combined in a Maternal and Child Welfare program but from a medico-social standpoint the work should be handled by experts in the different lines of work.

The contact between these two phases of work may be termed "Pre or Antenatal Care". This implies care of both the prospective mother and child. It should be supervised by a doctor with helpers who are especially competent to direct and to deal with the problems of "Prematernity". From the viewpoint of Infant Welfare workers, the results to be obtained from this care of mothers are 1°—the lowering of infant mortality, especially the early mortality, 2°—the lessening of morbidity to the lowest possible level, 3°—the handling over of a healthy child as early in its life as practicable with its mother able and fit to care for and nurse it and to a doctor who is competent to deal with the many problems of infant life.

Prenatal work is a small part of the Maternal Welfare program, for the latter involves many activities of various kinds.

The objects of the Maternal Welfare Program are 1°—to develop healthy parents, especially mothers who are intelligently trained; 2°—to bring them through life to maturity capable of having and rearing normal children; 3°—to reduce the maternal, fetal and newborn mortality and morbidity to the lowest possible level, 4°—to leave the mother with a desire and capacity to bear and rear children properly in a sufficient number and of such a quality as not only to maintain the integrity of the human race but to constantly improve its character.

This implies the improvement of the individual by bettering his antecedents, by protecting him from the folly and ignorance of his progenitors. It means the study, investigation and application of principles which will remove conditions which affect future generations badly and create those which tend to improve the offspring.

It is desirable that in the dependent stage of their lives individuals should be so cared for that they will pass through infant, child and young adult life into maturity with minds and bodies as nearly perfect as possible and so trained as to be able to give their offspring the best possible care, besides transmitting to them a legacy of sound body and mind.

Parents should have good antecedents, a good environment, be properly reared, educated and taught not only the care of themselves but of those for whom they are responsible and with whom they are associated in life.

This suggests the next phase by which we seek to protect individuals from the acts of others by means of certain laws and regulations affecting their conduct. This is of course part of a general welfare legislative plan, but there are many special problems which affect women and especially prospective mothers, which have to be very thoroughly understood and carefully worked out. It must not be forgotten, however, that all public welfare work, while it has definite and concrete results on the existing

generation, has a more permanent effect on future generations and is therefore intimately associated with problems of heredity.

The family should be protected from various detrimental influences by education, legislation, and proper help and advice. This means that each family should have a normal economic status, proper housing, etc., good sanitary surroundings, proper advice, and care in case of physical or other needs resulting from disease, economic reverses, or distress of any kind. Some of the medical problems which vitally affect the individuals and the family are those dealing with tuberculosis and venereal diseases. These activities are very closely allied to Maternal Welfare work.

A comprehensive Maternal Welfare program should include investigation into both medical and social problems. This virtually constitutes a study of many problems connected with the production of human life. Some of these medico-social problems which vitally affect the individual, the family and the community, are those relating to sterility, whether apparent or real, to abortion, to premature births, and still births, whether ante or post-partum. A study of causes and methods of controlling promiscuous sexual relations and from a medical standpoint investigation into methods of eradicating venereal diseases is of the utmost importance.

An analysis of the causes and practical application of the principles for preventing the development and transmission of degeneracy, insanity and physical defects would be of great benefits to the human race.

A careful and unbiased study of the causes of economic insufficiency of the family with its disastrous effects on the mother and children is one of the fundamental problems of maternal and infant welfare. An investigation of the causes underlying the diminishing birth rate resulting from increasing sterility, abortions, desire to limit the size of families, etc., is of prime importance to many countries.

Of medical problems which need special investigation, there are many. Practically all conditions which complicate pregnancy, labor and post natal conditions in mother or child need further study. Many of these are practically unexplored fields. Of the cause of eclampsia we are ignorant. We know practically nothing of the physiology and pathology of the child developing in utero and the effect of maternal environment, habits and disease on the fetus.

The Educational Program involves the education of young adults along proper sex lines. This necessitates careful study and thought in laying out the educational program as well as in selecting those who are to give this instruction. It includes the education of prospective fathers and mothers in the physiology, hygiene, pathology, psychology and sociology, of maternity and infancy.

Of the highest immediate and practical importance is the proper education and training of those who give prenatal, natal, and post natal care to mother and infant. This includes doctors, midwives, nurses and social workers and the institutions which are responsible for their training.

The Legislative Program includes those laws which are designed to protect the family unit in health, economic independence and happiness, or to prevent any invasion by medical or social disease. The mother must not be forced into conditions of existence which will be detrimental to her or the future child. This means provision for proper maintenance, good living conditions, protection from disease, improper work, etc. Laws should protect the unborn child from death, disease, and harmful influences, insofar as this can be accomplished. Legislation should provide for the license and proper inspection of institutions and individuals to whom the care of mothers and babies is entrusted. There should be some assurance that they are properly trained and capable of carrying on their work.

Some provision must be made for the necessary institutions which include in addition to the educational institutions for training special workers, others such as special medico-social centers in connection with communal activities. There should be close association and coordination between the medical, social and educational work in these centers from which all medical and social activities in a given area should emanate.

Maternal Welfare work should include some institution for the education of prospective parents, especially the mothers, where talks

and demonstrations give them the necessary knowledge of themselves and their babies. Home visitors should go from these centers to the home where the women can be advised and taught.

Provisions should be made to furnish proper prenatal, natal, and post natal care in the home for both mother and infant.

There must be consultations for prenatal, post natal, and other necessary medical, dental, nursing and social care. It is necessary to have Prematernity Homes and Hospitals, as well as Maternity and Gynecological Hospitals. Post Natal Homes are necessary for those who need care for medical or social reasons. Public Welfare activities are so intertwined that it is impossible to isolate one from another, but there is not a more basic work in the whole plan than that of Maternal Welfare. The mother is the keystone of the family unit and the whole arch of human welfare and progress is sustained by the weight which rests from all sides on that keystone.

F. L. A.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNESOTA PATOLOGICAL SOCIETY

THE MINNESOTA PATHOLOGICAL SOCIETY held a meeting on Tuesday evening, October 21, at the Institute of Anatomy. This is the first meeting held after an interruption of a year. The program consisted of presentation of specimens as follows: Dr. E. T. Bell presented specimens of cardio-vascular conditions; Dr. M. Barron presented a specimen of pancreatic calculus; and Dr. H. E. Robertson presented a lipoma myxomatodes with recurrence in the same locality after an interval of two years.

The main paper of the evening was presented by Dr. Louis B. Wilson of Rochester on "The autopsy service in the A. E. F." This paper was discussed by Dr. H. E. Robertson.

F. L. Adair, Secretary.

ANNUAL MEETING SOUTHERN MINNESOTA MEDICAL ASSOCIATION

December First and Second, 1919, Mankato, Minn.

OFFICERS

John Williams, Pres., Lake Crystal, Minn.
W. E. Sistrunk, 1st, V. P., Rochester, Minn.
W. J. Richardson, 2nd V. P., Fairmont, Minn.
H. T. McGuigan, Sec., Red Wing, Minn.
G. F. Merritt, Treas, St. Peter, Minn.

The C. N. W. R. R. will have special coaches for the physicians attending the meeting.

Arrangements are being perfected for a special on the C. St. P. M. & O. R. R. to leave Minneapolis at 3:00 P. M. and arrive at Mankato at 6:00 P. M.

EVENING SESSION

Monday, December 1st, 1919

Auditorium Elks Club

Annual Banquet—Masonic Hall.

President's Address—The Activity of the Southern Minnesota Medical Association in Public Health. John Williams, M. D., Lake Crystal, Minnesota.

The Surgical Treatment of Bunions.—Chas. H. Mayo, M. D., Rochester, Minn.

Discussion by—H. W. Meyerding, M. D., Rochester, Minn.; A. R. Colvin, M. D., St. Paul, Minn.

The Treatment of the Second Stage of Labor, with Special References to the Prevention of Injury to the Child and to the Pelvic Floor.—J. B. DeLee, M. D., Chicago, Ill.

Discussion by—Fred L. Adair, M. D., Minneapolis; Wm. H. Condit, M. D., Minneapolis.

Technic for the Removal of Intrathoracic and Substernal Goiters.—Edward S. Judd, M. D., Rochester, Minn.

Discussion by—Archa E. Wilcox, M. D., Minneapolis, Minn.; Wm. C. Carroll, M. D., St. Paul, Minn.

Some Applications of the Principle of Focal Infections Including a Technique Applicable to Dental Infections.—Arthur D. Dunn, M. D., Omaha, Nebraska.

Discussion by—W. L. Shearer, D. D. S., Omaho, Nebraska; E. S. Rosenow, M. D., Rochester, Minn.; Boyd S. Gardner, D. D. S., Rochester, Minn.

Experimental Studies on Etiology of Influenza.—E. C. Rosenow, M. D., Rochester, Minn.

Discussion by—W. P. Larson, M. D., Minneapolis, Minn.; Kano Ikeda, M. D., Minneapolis, Minn.

Tuesday, December 2nd, 1919, 8:00 A. M.

FORENOON SESSION

Auditorium Elks Club

Recent Studies Upon the Therapeutic Application of Benzyl Alcohol Benzyl Benzoate and Some Homologous Compounds.—A. D. Hirschfelder, M. D., Minneapolis, Minn.

Discussion by—E. T. F. Richards, M. D., St. Paul, Minn.; H. Z. Giffin, M. D., Rochester, Minn.; J. C. Litzenberg, M. D., Minneapolis, Minn.

Acute Perforation of Stomach and Duodenum.—N. O. Ramstad, M. D., Bismarck, N. Dak.

Discussion by—R. E. Farr, M. D., Minneapolis, Minn.; J. S. Holbrook, Mankato, Minn.

Tuberculin in the Recognition of Obscure Tuberculosis.—J. H. Stokes, M. D., Rochester, Minn.

Discussion by—S. E. Sweitzer, M. D., Minneapolis, Minn.; J. G. Cross, M. D., Minneapolis, Minn.

A Modified Inguinal Hernia Technique. (L.)—George Earl, M. D., St. Paul, Minn.

Discussion by—Verne Hunt, M. D., Rochester, Minn.; W. A. Dennis, M. D., St. Paul, Minn.

Conditions Contraindicating Operation with Stone in the Kidney and Ureter.—W. F. Braasch, M. D., Rochester, Minn.

Discussion by—Oscar Owre, M. D., Minneapolis, Minn.

Modern Conceptions Regarding the Radical Mastoid Operation.—Horace Newhart, M. W., Minneapolis, Minn.

Discussion by—W. R. Murray, M. D., Minneapolis, Minn.; Carl L. Larsen, M. D., St. Paul, Minn.; R. A. Barlow, M. D., Rochester, Minn.

The Relation of Hepatitis to Cholecystitis. (L.)—Wm. Carpenter MacCarty, M. D., Rochester, Minn.

Discussion by—E. T. Bell, M. D., Minneapolis, Minn.; A. W. Sohmer, M. D., Mankato, Minn.

Lesion of the Knee Joint. —Emil S. Geist, M. D., Minneapolis, Minn.

Discussion by—A. A. Law, M. D., Minneapolis, Minn.; J. R. Kuth, Duluth, Minn.

Tuesday, December 2nd, 1919

AFTERNOON SESSION

The Treatment of Diabetes Mellitus.—L. G. Rowntree, M. D., Minneapolis, Minn., Prof. of Medicine, University of Minnesota.

Discussion by—D. M. Berkman, M. D., Rochester, Minn.; J. P. Schneider, M. D., Minneapolis, Minn.; S. Marx White, M. D., Minneapolis, Minn.

The Surgical Treatment of Gummatous Osteitis of the Skull.—A. W. Adson, M. D., Rochester, Minn.

Discussion by—Gilbert J. Thomas, M. D., Minneapolis; A. R. Colvin, M. D., St. Paul, Minn.

The Diagnosis of Cardiac Disease.—Jas. S. Gilfillan, M. D., St. Paul, Minn.

Discussion by—John E. Hynes, M. D., Minneapolis, Minn.; W. D. Sheldon, M. D., Rochester, Minn.

Clinical Study of Gastrojejunal Ulcer.—Geo. B. Eusterman, M. D., Rochester, Minn.

Discussion by—Hugh Willson, M. D., Minneapolis, Minn.; M. H. Cremer, M. D., Red Wing, Minn.

Lethargia Encephalitis.—E. M. Hammes, M. D., St. Paul, Minn.

Discussion by—W. A. Jones, M. D., Minneapolis, Minn.; A. W. Morrison, M. D., Minneapolis, Minn.

The Value of the Study of Blood Pressure in General Practice.—J. W. Andrews, M. D. Mankato, Minn.

Discussion by—John W. Bell, M. D., Minneapolis, Minn.; Chas. L. Greene, M. D., St. Paul, Minn.

CORRESPONDENCE

AN APPEAL FOR HUMAN EMBRYOLOGICAL MATERIAL

By William W. Graves, St. Louis

In 1906 I observed certain malformations of the human shoulder-blade, and in contributions to current literature I have given them the collective name —"the scaphoid type of scapula," and pointed out some of its hereditary, clinical and anatomical significance.

Probably the most important observation connected with this type of scapula in man is its age incidence, that is to say, it occurs with great frequency among the young and with relative infrequency among the old. There appear to be two possible explanations of this fact:

either

A—one form of shoulder-blade changes into the other during development and growth,

or

B—many of the possessors of the scaphoid type of scapula are the poorly adaptable, the peculiarly vulnerable, the unduly disease susceptible—the inherently weakened of the race.

I have attempted to answer these questions by seeking evidence in various directions and one of the most important of these has been a study of intrauterine development of shoulder-blades. My investigations in this direction have been limited by the material at my disposal, which has been inadequate for a definite solution of this phase of the problem. I am, therefore, appealing to physicians for fetuses in any and all stages of human development.

It is desired that the material, as soon as possible after delivery, be immersed in 10 per cent formalin in a sealed container, and be forwarded to my address; charges collect. Due acknowledgment will be made to those forwarding material.

OBITUARY

DR. ANGUS MacDONALD

Dr. Angus MacDonald, for fifty years a resident of St. Paul, died at his home October 11th. He practiced medicine in St. Cloud before locating in St. Paul. He is an uncle of Dr. A. E. MacDonald of Minneapolis. Besides his widow he is survived by three sons, Edward and Rupert of St. Paul and George of Salt Lake City.

DR. FRANK O. SHERWIN

Dr. Frank O. Sherwin died at his home in Duluth on October 24th at the age of 66 years. Dr. Sherwin graduated from the Rush Medical College in 1880 and after practicing at Lawler, Iowa, for a short time he came to Duluth where he has resided since. A widow and one daughter survive him.

OF GENERAL INTEREST

Dr. C. A. Rathbun of Rice has located at Sauk Rapids.

Dr. H. T. Sherman of Minneapolis has located at Franklin.

Dr. W. W. Brown of Cottonwood has removed to Marshall.

Dr. R. V. Williams of Rushmore will locate in Peterson.

Dr. John L. Mulber of Rock Valley, Iowa has located at Chaska.

Dr. Arthur Bratrud of Grand Forks, N. D. has removed to Minneapolis.

Drs. Kirsch, Norman and Drydxn of Crookston have entered into partnership.

Dr. and Mrs. G. R. Pease of Redwood Falls have gone to California for the winter.

The board of county commissioners of Nicollet county have purchased the Field Hospital.

Dr. B. S. Adams of Hibbing has been elected a member in the American College of Surgeons.

Dr. F. O. Folken of Omaha has moved to Albert Lea and become associated with Dr. H. D. Burns.

Dr. Leo Maguire of Minneapolis was awarded the Belgium croix de guerre by King Albert of Belgium.

Dr. G. DeJong of Morris, Iowa, has been appointed a member of the staff at the State Hospital at Fergus Falls.

Dr. W. J. Kucera of Montgomery was married October 4th to Miss Florence M. Wilson of San Antonio, Texas.

Dr. and Mrs. W. A. Allen of Rochester celebrated their sixty-fifth wedding anniversary at their home on October 25th.

Dr. Ida M. Alexander of Sauk Center has located at Bismarck, N. D. She has been appointed executive officer of that state.

Dr. N. D. Carter of Texas has entered the City Hospital at Worthington and will be associated with Dr. Henry Wiedow.

Dr. W. E. Braasch of Rochester has been elected a member of the council of the Minnesota State Medical Association.

Dr. Ward Akester of Marshall has been appointed medical officer for Lyon county by the United States Public Health Service.

Dr. D. S. Fleischhauer has been appointed Medical Examiner for the Bureau of War Risk Insurance in the county of Wabasha.

Dr. D. E. Nelson, who served in the medical corps for fifteen months returned to Brainerd where he will resume his practice.

A bulletin entitled "Water Supplies and Sewerage Systems for Farm Residences" is now being distributed by the State Board of Health.

Dr. R. W. Huffman of Stewartville who has recently returned from a year's service with the Canadian army, has decided to locate at Elgin.

Dr. Harry A. Britton, assistant superintendent of the City Hospital of Minneapolis has resigned. He will leave the hospital December 15th.

Dr. C. F. Lewis returned to Austin after a two weeks trip to New York where he attended the Clinical Congress of American College of Surgeons.

The rate for patients in the pay ward service is $15.00 per week with additional operating room charge of $6.00 and further charges for certain drugs, Xray and so forth.

Dr. Paul W. Giessler has resumed civil practice and announced the opening of his offices at 303 La Salle Bldg., Minneapolis. He will limit his practice to orthopedics.

Dr. R. E. Farr read a paper entitled "Necessity for and some methods of enlarging the scope of local anesthesia" for the Wayne County Medical Society of Detroit, Michigan on October 27th.

The University Hospital announces that a pay ward service has been inaugurated with a limit of fifty ward beds. This service provides for individuals who are able to pay moderate hospital expenses, but who would be unable to pay both hospital and physician's fees. The patients are subject to the rules of the hospital, and agree to submit themselves for clinical study, just the same as though they paid nothing.

The following is from the report of President Burton of the University of Minnesota, for the year ending June 30, 1919, recently made public.

The time has come when the University must face decisively the question of hospital expansion in the Medical School. In fact, this problem involves the entire educational policy of the Medical School, and in a very real sense, the future medical education in the Northwest. The whole question of medical training has been passing through an interesting evolution in recent years. The report of Abraham Flexner on Medical Education in the United States helped to bring about a marked improvement. Experience with the principle of full-time teaching has shown some interesting results. It is quite evident that two rather well formed conclusions are emerging: (1) that any plan which entirely prevents a clinical professor in the Medical School from practicing his profession is unwise, and (2) that plans must be developed and facilities must be provided whereby such a member of the medical faculty may give his chief time and interest to his educational work, but will have opportunity for a limited amount of private and consulting practice. These principles, if sound, present a very difficult problem to a medical school in a state university. It is logical to maintain that a professor of medicine must keep his contact with the profession, that he must have the benefit of actual practice, and that he must have a sufficient income to meet his financial needs and professional responsibilities. It is in the interests of sound educational policy to require a member of the medical faculty to make teaching and research his first task. The elements of the problem are further complicated in a university by the fact that full time clinical teachers can not be secured and retained for salaries usually paid to university professors in other fields. It is generally conceded, and has been for some time, that the salaries of teachers in some of the professional schools must be higher than in other colleges of the universities. This particular principal, however, is taking on a new phase and is beginning to be applied not only to Law and Medicine, but also to Engineering, and more recently to members of the staff of the new professional School of Business. But even this principle does not meet the situation fully in the Medical School. The average salary of professors in the University as a whole may be approximately $3,300, while the salaries of professors of Law and Medicine range from five to six thousand; and even then the medical situation is critical. The way out seems to lie in the direction of engaging the approximately full-time clinical teacher on the basis of a moderate salary and to combine with it the privilege of engaging in a reasonable amount of private and consulting practice. Such a plan has two advantages: (1) it gives the member of the medical staff increased facilities for maintaining his professional contact and standing and (2) it provides a channel by which adequate and reasonable financial income may be secured.

We come now to the heart of the problem. If such a professor is to utilize his time and energies in a wise and effective manner, he must have at his disposal and close at hand hospital facilities for the care of his patients. In our Elliot Memorial Hospital, however, our plans provide for only free and per diem patients. The private patient is rigidly excluded. Therefore, the logic of the situation leads irresistibly to the conclusion that hospitals must be provided in which private patients of the members of the staff together with per diem patients can be cared for, or the University is compelled frankly to abandon the plan of full time clinical teachers. The issue is clearly drawn. For the sake of the part-time men, as well as the so-called full-time men, the latter alternative is unthinkable. But one further difficulty besets us. For the present, and particularly in view of the adoption of the comprehensive building plan, the state can not be expected to provide hospitals for the private patients, even of members of the staff. Therefor, by the very nature of our problem we are driven to the necessity of recognizing that this type of hospital expansion must be provided for by private gifts. This University at once must seek from one half to three quarters of a million of dollars for hospital expansion with the necessary accompanying provision for the housing of nurses and caring for the administrative and service features. It should be pointed out at once that such a hospital would be self-supporting, even to the extent of providing for overhead charges. It would make possible the carrying foward of plans already adopted in this University. It would hasten the development of a diagnostic clinic. All types of patients—free, per diem, and pay patients—would be given the very best care. The position here taken is unquestionably the logical answer to our present situation. The problem of hospital extension demands immediate action. No citizens could render a more important service to the University, nor do more to ensure its high place in the Northwest than by providing generously by private gift for the expansion of our hospitals. In the Elliot Memorial Hospital we now have one hundred and ninety-two beds, fifty of which are on the per diem basis. We should have at least five hundred and fifty beds. What the University of Michigan has done we can do. Policies which are successful in other state universities should prove feasible here. The administration stands ready fully to cooperate with the Medical School in bringing about an immediate and adequate expansion of its hospital facilities.

NEW AND NON-OFFICIAL REMEDIES

During September the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Nonofficial Remedies:

Abbott Laboratories:
Tablets Cinchophen-Abbott 7½ grains.
Calco Chemical Co.:
Albutannin-Calco.
Acetannin-Calco.
Cereo Company:
Soy Bean Gruel Flour.
Gilliland Laboratories:
Antipneumococcic Serum Combined Types 1, II and III.
Antistreptococcic Serum.
Hynson, Westcott & Dunning:
Acriflavine (Boots).
Proflavine (Boots).
Merck & Co.:
Albutannin-Merck.
Takamine Laboratory, Inc.:
Hirathiol.

Typhoid Paratyphoid Bacterial Vaccine, Immunizing Gilliland.—Marketed in packages of three 1 Cc. ampules, one containing 250 million each killed paratyphoid A and B and 500 million killed typhoid bacilli, and two containing 500 million each killed paratyphoid A and B and 1,000 million killed typhoid bacilli, and in packages of three 1 Cc. syringes, one containing 250 million each killed paratyphoid A and B and 500 million killed typhoid bacilli, and two containing 500 million each killed paratyphoid A and B and 1,000 million killed typhoid bacilli. Gilliland Laboratories, Ambler, Pa. (Jour. A. M. A., Oct. 11, 1919, p. 1137).

Hirathiol.—An aqueous solution of a synthetic product, the important medicinal constituents of which are ammonium compounds containing sulphur in the form of sulphonates, sulphones and sulphides. It is claimed that hirathiol is equivalent in every respect to the original ichthyol; hence, its actions, uses and dosage should be similar to that of the older preparation (see Sulphoichthyolate Preparations, New and Nonofficial Remedies, 1919, p. 319). Hirathiol is a syrupy, brownish-black liquid, having a characteristic empyreumatic ordor. It is soluble in water, glycerin and alcohol. It is miscible with fats. Takamine Laboratory, Inc., Clifton, N. J.

Soy Bean Gruel Flour.—A flour prepared from the soy bean, having approximately the following composition: protein, 44; fat, 20; sucrose, 10; ash, 4.3; fiber, 2; water, 4.6. Soy bean gruel flour may be used for preparing muffins. It is indicated in cases in which a diet relatively free from carbohydrates is desired, as in diabetes, amylaceous dyspepsia, etc. It has also been suggested for the diet in obesity. Cereo Company, Tappan, N. J. (Jour. A. M. A., Oct. 18, 1919, p. 1215).

Antistreptococcic Serum-Gilliland.—The serum of horses which have been immunized with virulent strains of hemolytic streptococci. Each package bears the statement "No U. S. Standard of Potency." Marketed in 10 Cc. syringes, 20 Cc. injecting packages and 50 Cc. injecting packages. Dose: 10 to 200 Cc. (See New and Nonofficial Remedies, 1919, p. 272). Gilliland Laboratories, Ambler, Pa. (Jour. A. M. A., Oct. 25, 1919, p. 1287).

PROPAGANDA FOR REFORM

Formaldehyde Tablets.—During the recent influenza epidemic a variety of tablets or lozenges were advertised which were claimed to owe their asserted value to the fact that they contained formaldehyde and liberated it on contact with the saliva. Tablets containing hexamethylenamine or other formaldehyde compounds can neither cure respiratory infection, nor even confer a protection against such infection. To be effective, formaldehyde would need to be supplied to the entire respiratory tract continuously for some time, or else in concentrations that would be distinctly irritant and damaging to the tissues. Some years ago, the Council reported on the inefficiency of Formamint, which was said to be an efficient germicide by virtue of the liberation of formaldehyde on contact with the saliva. To call attention to the inefficiency of this form of medication, the Council on Pharmacy and Chemistry now reports that the following were found inadmissible to New and Nonofficial Remedies: Hex-Iodin (Daggett and Miller Company, Inc.), Formotol Tablets (E. L. Patch Company) and Cin-U-Form Lozenges (McKesson and Robbins) (Jour. A. M. A., Oct. 4, 1919, p. 1077).

Solubility of Intestinal Ipecac Preparations.—T. Sollmann reports that in the administration of ipecac preparations against intestinal amebas, salol coated pills are not always satisfactory, although with due care, it appears quite feasible. He reports that emetin bismuth iodid, which is described in New and Nonofficial Remedies, is only slightly soluble in water and dilute acid, but dissolves quite freely in one per cent sodium bicarbonate solution. It is somewhat soluble in the stomach and produces some digestive disturbances. Alcresta ipecac, an adsorption product of ipecac and fuller's earth, though sold with the claim that the alkaloids are "physiologically inert as long as they remain within the stomach, and are rendered active when set free in the alkaline media of the intestine," was found by Sollmann not to be decomposed with liberation of alkaloid by solutions having the alkalinity of the intestinal fluid. Ordinarily, it would not be expected that a substance which is quite insoluble in the intestines should still be effective on amebas. The findings of Sollmann demand a careful examination of the clinical evidence on which the use of alcresta ipecac is based (Jour. A. M. A., Oct. 11, 1919, p. 1125).

More Misbranded Nostrums.—Rubino Healing Springs Lithia Water was found misbranded under the Federal Food and Drugs Act because it did not contain enough lithia to entitle it to the name "lithia water" and because of false claims as to its therapeutic value. Lower's Hot Springs Pure Blood Remedy was declared misbranded because it was falsely represented to be a treatment or remedy for syphilis, paralysis, catarrh, eczema, malaria and other diseases. Analysis showed it to be a weak alcoholic solution containing sugars, small amounts of chlorides, iodides and sulphates (probably as the sodium salt), and vegetables extractives, among which are podophyllum and an atropin-bearing drug. Kuhn's Rheumatic Specific was declared misbranded because it was sold as a cure for all forms of rheumatism, neuralgia, blood diseases, lumbago, etc. It was found to be a water-alcohol solution containing essentially potassium iodid, iodin and sugar with indications of small amounts of plant material and aromatics. Schade's Specific and Female Regulator was declared misbranded because the therapeutic claims for this "female regulator" was found false. It was a water-alcohol solution containing chiefly sugar, aromatics, essential oils, licorice and bitter plant extractives (Jour. A. M. A., Oct. 11, 1919, p. 1151).

The William A. Webster Company and the Direct Pharmaceutical Company.—The Direct Pharmaceutical Company of St. Louis is apparently merely a sales agency for the William A. Webster Company of Memphis, Tenn. In government bulletins issued in October, 1913, there were reported some cases of adulteration and misbranding on the part of the William A. Webster Company. In a similar bulletin issued in August, 1914, there were reported several more cases of adulteration and misbranding charged against the William A. Webster Company. In a government bulletin issued in June, 1917, the same company was charged with adulterating and misbranding Aspirin tablets (Jour. A. M. A., Oct. 18, 1919, p. 1231).

An Uncritical English Endorsement of Collosols.—Under the auspices of the English Association for the Advancement of Science, there has appeared a report on the present status of colloidal chemistry. A chapter on the "Administration of Colloids in Disease" is devoted largely to the "Collosols," proprietary preparations made by the Crookes Laboratory. In it, the advertising "literature" of the Crookes concern appears to have been considered ample source of information. In the United States the medical profession has been informed by the Council on Pharmacy and Chemistry that a number of the "Collosol" preparations were not colloids at all and "if . . . . injected intravenously as directed, death might result, making the physician morally if not legally liable." The Council also reported that in cases in which the therapeutic claims were examined, the claims were improbable or exaggerated and that "Collosol Cocaine" did not contain the claimed amount of cocain (Jour. A. M. A., Oct. 18, 1919, p. 1218).

The Patenting of New Therapeutic Agents.—Enterprising pharmaceutical manufacturers have usually been ready to appropriate the results of scientific research by investigators or therapeutic measures suggested by practicing physicians. Not infrequently, in such cases, the desire for financial gain has caused the marketing of such products with extravagant, if not false, claims as to their value. Therefore, though it is unethical for physicians to receive remuneration from patents on medicines or instruments, it is important that new therapeutic agents discovered in our research institutions be protected by patenting them and thus to so control them that they may be available without subordination to commercial interests. In 1914, the House of Delegates of the American Medical Association passed a resolution to the effect that the board of trustees of the Association should accept at its discretion a patent on a medicine or surgical instrument, as trustee, for the benefit of the profession and the public, provided that neither the association nor the patentee should receive remuneration for this patent. The Rockefeller Institute for Medical Research has solved the problem in a similar manner. Certain products discovered there have been patented. It is proposed to permit the manufacture of such discoveries under license by suitable chemical firms and under conditions which will insur the quality of the drugs and their marketing at reasonable prices. It is further announced that the Institute will not receive any royalties or pecuniary benefits from the licenses it issues (Jour. A. M. A., Oct. 18, 1919, p. 1219).

Anasarcin Advertising.—Dr. Louis Teitzman reports that charts and part of the text of a book by him is being used as advertising by the Anasarcin Company, and that his publishers think that, in spite of the violation of copyright, nothing can be done. Knowing the standards of ethics the Anasarcin Company adopts in the exploitation of its ridiculous squill mixture "Anasarcin," the appropriation of copyrighted material is not surprising. However, something can be done by those who hold the copyright (Jour. A. M. A., Oct. 18, 1919, p. 1232).

P. Presto Company.—This company, also known as "The Presto Manufacturing Company" and "The Presto Company" was a mail order concern operated from Albany, Oregon, by one Edward F. Lee. Lee is now in the penetentiary, and the Presto Company has been debarred from the U. S. mails. Lee's business was that of selling on the mail order plan what he termed his "New Method Treatment for Sexual Weakness and Varicocele in Men" (Jour. A. M. A., Oct. 25, 1919, p. 1302).

An Insidious Influence.—A knock at the door. A gentleman with a grip full of samples and literature is ushered in. After a pleasant chat in which you are "informed" about the action of the particular remedies in which he is interested, he leaves you samples and departs. You turn to New and Nonofficial Remedies and find no mention of his remedy. Why? Because the Council on Pharmacy and Chemistry of our national organization has investigated the article and found sound reason why it should not be used by the profession, or else, the manufacturer did not deem it advisable even to submit the article (Minnesota Medicine, Sept. 1919, p. 355).

A Pharmaceutical Clearing House.—The Council on Pharmacy and Chemistry of the American Medical Association is carrying on a work of great usefulness to doctor and layman. Actuated by no selfish interests, condemned by designing sharks who wish to exploit their frauds, and ridiculed by the jealous manufacturers of pharmaceuticals, the Council pursues the even tenor of its labors, playing no favorites, exposing frauds wherever found, and awaiting not the stamp of approval, of praise, or of gratitude from any one. This "clearing house" is the medium through which physicians may learn the unvarnished, straightforward truths about proprietary products. A plea of ignorance of proprietary articles used does not excuse the physician, since it is his duty to follow the course of instruction offered by the Council and to appeal to this clearing house for information (Southern Medical Journal, Sept. 1919, p. 581).

PROGRESS IN MEDICINE AND SURGERY

VESICAL DIVERTICULUM: A clinical Analysis of 21 Cases, by Frank Hinman, (Surgery, Gynecology and Obstetrics, Volume XXIX, No. 2) The author states that in 21 cases of diverticulum in his practice there were two women in the series which is unusual. The ages varied from 37 to 77 with an average of 56 years. There were only three cases under 50.

It has no distinctive symptomology. The importance of the cystogram is universally recognized, but no previous writer has emphasized the importance of making contrast cystograms. The following technique is used: After the bladder has been filled by the gravity method and a plain cystogram taken, the injection solution is drained off and the bladder immediately refilled with air by injection with a double cautery bulb through the urethral catheter. The second X-ray plate, the contrast cystogram, is now taken. The air-filled bladder stands out in

marked contrast to the pouches which have not had time nor opportunity to empty themselves of the X-ray solution. In several cases pouches that were indefinite or not shown at all in the simple cystogram were beautifully demonstrated by the contrast method, and in a few cases a supposed diverticulum with the plain cystogram was disproved by the contrast cystogram. Furthermore, the contrast method will usually give a fairly accurate record of the number and relative size of pouches. It is the exception for the diverticulum not to remain filled after bladder drainage, nevertheless, failure to get a contrast picture is not proof of the absence of a diverticulum.

The author continues. In 17 operations in which the number and relative position of the diverticula were determined by direct examination, a single large diverticulum was present in 11 cases, two large diverticula in 44 cases, and three and four large diverticula each in 1 case. In every case of single sacculation the orifice was located in the neighborhood of an ureteral orifice. In the cases with two diverticula there was usually one near each ureteral meatus. The base showed a diverticulum only when the neighborhood of the ureteral orifices had diverticula and in these instances the diverticulum at the base was always the smallest. In not one case of the 17 operations was the region of one or the other ureteral orifice uninvolved.

The base and posterior walls of the bladder were markedly trabeculated in every case. Large cellules easily admitting the tip of the gloved index finger were located in the neighborhood of the opposite ureter in 9 of the 11 cases of single diverticulum, and in the base of the bladder in 3 of 5 instances of multiple diverticula. In no instance was the mouth of the diverticulum or the cellule found on the high lateral or anterior walls of the bladder. The ureter was shown by the cystogram to be markedly dilated on the right in three cases, and on the left in two; both ureters were dilated in one case.

He says, "A contracture of the vesical neck was found in association in 13 cases and received surgical treatment in 8. A small fibrous or ring prostatic hypertrophy was removed suprapubically in three cases and perineally once. A large glandular prostatic hypertrophy complicated two cases. The diverticula in all of these six cases associated with prostatic enlargement were relatively small and were untreated surgically in three cases, in the two large glandular and in one fibrous hypertrophy. In the two cases in women, which have not come to operation, no definite obstruction to urination other than that attributable to the diverticula was found."

An analysis of symptoms disqualifies vesical diverticulum as a distinct clinical entity. The onset, course, and termination duplicate the clinical picture of prostatism. With respect to urination the onset symptom was: difficulty in 14, frequency in 7, urgency in 4, hesitancy once and simple difficult urination twice. Complete retention occurred at the onset in 3 cases, two of which had contractures of the neck, and the other a small fibrous hypertrophy. Diminution in the urinary force, pyuria, pain in the lumbar region and pain in the right side were the respective initial symptoms in four cases. Cloudy urine was first noticed on an average of 6 years, and was absent altogether in 5 cases, whereas the average duration of symptoms since onset is 16 years Vesical calculas complicated the anomaly only once.

GEORGE EARL.

THE MODIFIED SLUDER VERSUS THE SNARE OR DISSECTION OPERATION IN TONSILLECTOMY: Harry Rodman, M. D. (New York Medical Journal, June 28, 1919) summarizes systemic disturbances of focal origin as caused by diseased tonsils and concludes that complete enucleation of the tonsil is the only rational method of dealing with such tonsils.

In comparing methods he states the disadvantages of the snare operation namely; injuring pillars, incomplete dissection with only partial removal of the tonsils.

The advantages of the Sluder operation are: a minimum length of time, less danger to pillars and soft parts, shorter time for anaesthesia, less hemorrhage. Its disadvantages are, that it cannot be used under local anaesthesia, it is more painful and dissection in necessary in submerged tonsils and with children.

In concluding the author suggests that every surgeon doing this line of work should be conversant with both methods as at times it is necessary to use either one of them.

Reviewer's Notes: The fact that each year brings forth new instruments and technique relating to tonsil surgery is evidence that the perfected method and technique has not been achieved. From this it would seem that while each method is the best in the hands of the originator there is no need to switch from one method to another, the main object is to master one method and remove the tonsil in toto in as short a time as possible, with the least unnecessary trauma to surrounding tissues.

GEORGE C. DITTMAN.

STUDIES ON CIRRHOSIS OF THE LIVER FOLLOWING INTRA-PORTAL INJECTION OF TOXIC SUBSTANCES: Sukemasa Ogata, (Jour. of Med. Research, Vol. XL., No. 1, 1919) points out that while there are still many unknown factors which influence the cause and development of Laennec's cirrhosis of the liver, it has been recognized by clinicians that the cirrhosis occurs in connection with the absorption of some toxic substances that act injuriously on the liver cells or the connective tissue or on both.

Quite a few authors have attempted the direct injection of toxic substances into the portal vein;

Afanassijew injected alcohol into the portal vein and found cirrhotic changes in the liver, and Ribbert employed alcohol and ether by the same method with increase of interstitial connective tissue following necrosis of the parenchymatous cells. Recently, Kiyona and Murakami reported the changes in the liver caused by injections of various foreign bodies into the portal vein. Diverse changes observed by them depended upon the degree of irritation causing emigration and proliferation of cells in the walls of the blood vessels and in the interlobular connective tissue spaces.

The writer employed alcohol, an extract of cigar tobacco, an emulsion of killed tubercle bacilli, and an emulsion of killed colon bacilli, for the toxic substances. He injected a varying number of doses of these substances into different animals, at intervals of some days. He also injected alcohol and extract of cigar tobacco into the ear vein of other rabbits, for the purpose of comparison.

In the cases in which the writer injected alcohol into the portal and mesenteric veins repeatedly there were seen marked cirrhotic changes in the interlobular spaces, with often newly formed bile ducts, especially marked in one case; and in addition in two of the cases there was also a marked round cell infiltration with increase of connective tissue in the central portions of the lobules. Further, there were also in this series various pronounced degenerative changes of the liver parenchyma. The cirrhosis, however, was not the same as Laennec's cirrhosis of the liver. On the other hand, in the series of cases in which alcohol was injected repeatedly into the ear vein, but slight changes in the interlobular spaces and in the parenchyma of the liver were observed. The difference observed in the two groups of experiments may be due to the difference in concentration of the alcohol as it arrives in the liver.

It is evident that the repeated injections of extract of cigar tobacco into the portal and mesenteric veins may have some toxic effects on the liver. Various changes in the liver parenchyma with remarkable fatty change in two cases in this series have been noted, but only a slight infiltration of round cells with usually no accompanying increases of connective tissue in the interlobular spaces was observed. The case in which extract of cigar tobacco was injected repeatedly into the ear vein showed almost analogous changes, though they were not quite so marked. The difference again may be a difference in concentration. Thus the results of these experiments with nicotine were quite different from those of Laennec's cirrhosis of the liver. It may be said, therefore, that there is no special relation between cirrhosis of the liver and nicotine, as far as these experiments go.

Though the repeated injections of sterilized emulsion of human tubercle bacilli into the portal vein and mesenteric veins of the rabbit, there followed marked changes resembling tuberculous lesions which were followed by an increase of connective tissue, chiefly in the interlobular spaces, together with some toxic effects on the parenchyma of the liver.

The series of cases in which was injected an emulsion of killed colon bacilli repeatedly, into the portal and mesenteric veins, showed marked cell infiltration and some proliferation of connective tissue in the interlobular spaces and some toxic effects on the parenchyma of the liver.

In spite of the marked cirrhotic changes of the liver in some cases, no ascites has been seen in these experiments, and it is probably very difficult to produce ascites under such experiments.

The extent of the changes of the liver is not always proportional to the frequency of the injections of toxic substances into the portal or mesenteric veins in the same rabbit or in different rabbits. In the latter it may depend more or less on the individuality of the rabbit, but the results obtained may be more reasonably explained by the observation that the cells which were once injured by the toxic substances are regenerated and then develop an increased resistance to these substances.

E. T. F. Richards.

THE IMPORTANCE OF EARLY RECOGNITION OF SURGICAL CONDITIONS OF THE BILIARY PASSAGES: Deaver and Reimann (Surg. Gyn. and Ob. Vol. XXIX No. 4.) state that it is a matter of justice to both patient and surgeon that the internist advise early operation in conditions that fail to respond to treatment within a certain reasonable time. There are a few abdominal conditions which carry within themselves more potential mischief than diseases of the gall-bladder and biliary tract. The diagnosis of affections of the gall-bladder is not always easy, even at the operating table, the normal blue appearance of the thin walled gall-bladder may not be changed, but serious infection may be in its contents and only waiting a chance to invade the gall-bladder wall. More than a decade ago, Moynihan called attention to the fact that the earliest symptoms are referred, not to the liver or gall-bladder, but to the stomach. The symptoms are a feeling of epigastric fullness, weight or distress after eating relieved by belching and especially by vomiting. There is a distinct relationship to certain kinds of food. Heartburn and acid eructations also frequently form a part of the history. The patient often notices a catch or pain in the right costal margin on taking a deep breath. These attacks occur with more or less frequency, increase in severity, and the pain usually radiates to the back, the right shoulder or the right arm. Vomiting of bile is common. Jaundice is generally not present during the attack, but may or may not appear two or three days later. A slight icterus at this time usually indicates that a small stone has successfully passed through the cystic duct and caused only a transitory stasis of bile as it traversed the papilla of Vater. It may, however, also indicate that the inflammatory process has extended into the common or hepatic ducts and that the obstruction is due to swelling of these passages. Operation is especially indicated in this class of cases. Sooner or later a stone will fail to pass, will lodge in the common duct, and lead to acute or chronic obstructions of that canal. The serious com-

plications that may arise from the above process, can only be forstalled by early treatment of the cholecystic disease. The operative mortality rises directly with the gravity of the superadded conditions. In acute cholecystitis, the figure ranges from 2 per cent to 4 per cent, when complicated with common duct obstructions, it rises to 5 per cent. With pancreatic involvement it reaches 9 per cent. Cholecystitis is the most common cause of pancreatic lymphangitis. This is the first degree of chronic pancreatitis. Acute pancreatitis is also frequently due to this infection. Pathologically in both calculus and non-calculus chronic cholecystitis, the writers found that in an overwhelming majority of cases, all the coats of the gall-bladder are involved. In the mucosa, there is congestion, swelling, degeneration and increase in the amount of mucus. Lipoid changes occur in which lipoids and cholesterin are deposited in the mucosa and the submucosa. This presents the so-called strawberry Gall-Bladder. This is not of significance as the same condition may occur in other Gall-Bladders and chance may prevent deposition in this particular way.

The interstitial changes, involving submucosa, muscularis and peritoneum are more important than changes in the mucosa. They show how infection spreads from the interior of the gall-bladder to the peritoneum. In long standing cases the gall-bladder is often atrophic, in others it may be distended and filled with thick mucus, sometimes bile stained, and sometimes when the normal function of the organ is lost, no trace of bile is present. Gall stones were present in 70 per cent of the writer's cases.

Medical treatment of the disorder, can and often does, effect a certain degree of improvement and relief of symptoms, but it cannot bring about a cure as it cannot reach the site of the trouble.

The importance of early recognition of surgical conditions of the bile passages is obvious. The history, together with the careful physical examinations are the most reliable guides to a diagnosis. Laboratory procedures, and X-Ray findings, when properly interpreted, are valuable adjuncts. When the diagnosis is made the treatment is surgical. The complications and sequelae are too constant and too grave, to allow other than this proceeding.

E. M. Jones.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

The Future of Medicine, Mackenzie. Oxford Medical Press, 1919., $5.00.

Medical Clinics of North America. W. B. Saunders Co., July, 1919.

Thoughts of a Psychiatrist of the War and After. Hoeber, 1919. $1.75.

Surgical Clinics of Chicago. W. B. Saunders Co., Aug. 1919.

Treatment of Gout. Berkart. Oxford Medical Press. (Paper) 1919. $ .75.

Experimental Pharmacology. McGuigan. Lea & Febiger. $2.75.

Manual of Hygiene and Sanitation. Egbert, Lea & Febiger. $3.00.

Hygiene and Sanitation for Nurses. Price. $1.75.

THE SURGICAL CLINICS OF CHICAGO, February 1919, Vol 3, No. 1. W. B. Saunders Company, Philadelphia.

As usual with the numbers of this valuable publication, it contains much information. Particular attention might be directed to the lecture on the technic in blood tranfusion, by Dr. Victor D. Lespinasse and three cases of plastic repair of facial defects by Dr. Carl Beck, besides numerous reports of more or less rare cases with the careful and sometimes original methods of handling them. The many contributers to this number have made it one of unusual value. L. C. Bacon.

SURGICAL ASPECTS OF TYPHOID AND PARATYPHOID FEVERS. By A. E. Webb-Johnson, D. S. O., M. B., Ch. B. (Vict). F. R. C. S. (Eng.) Oxford Medical Publication, 1919. $4.50.

It is a valuable addition to the rather meager and scattered literature on surgical phases of these fevers and is made possible by the author's comprehensive contact with the large number of cases brought together in the recent war. L. C. Bacon.

STERILITY IN WOMEN. By Arthur E. Giles, M. D., F. R. C. S., M. R. C. P., Oxford Medical Publications. 1919. $4.00.

This is the author's first edition, a book of 200 pages of reading matter, followed by a chronologically arranged bibliography consisting of over 240 references.

The subject matter is presented in a very logical order, taking up first man's responsibility in the matter and then passing on to the consideration of sterility as it may be caused by functional disorders, disease, injury and malformations.

A most valuable adjunct is the report of case histories, 110 in all, taken from the author's records, illustrating the various factors and conditions that may be productive of sterility.

The chapters of Diagnosis, Prognosis, and Treatment, the last three chapters of the book, form really a brief but exceedingly interesting and valuable treatise on Gynaecology. Albert G. Schulze.

THE EARLY TREATMENT OF WAR WOUNDS. Colonel H. M. W. Gray. C. B., C. M. G., M. B. Aberdeen, F. R. C. S. Ed. London, Oxford Medical Publications, 1919. $3.75.

A volume of utmost interest especially to the surgeon specializing in Traumatic Surgery. Presenting in a pleasing, concise, style many unique methods for the care and treatment of war wounds, with special emphasis upon the major subject of wound shock, operation of war wounds of the brain and coverings, penetrating wounds of the thorax, injuries to the spinal cord and describes in detail the treatment of gun shot wounds by excision, primary, delayed primary, and secondary sutures.

W. C. Rutherford.

CORRECTION.

The following should be substituted for the last four lines in the second column on page 434:—communities thoroughly aroused to the situation, surely this campaign against venereal diseases can result only in victory. We offer you then the use of our machinery for investigation, for diagnosis, for social service, for education, and we ask you to avail your

The following should be substituted for the last eight lines in the second column, page 435:—to have a medical degree" here is a report from the Federation of State Medical Boards' Bulletin of February, 1918. which says (1) A general knowledge of entire human

The following should be substituted for the last six lines of the second column, page 436:—obtained by any operation and the necessity for glasses would be present just as much after an operation." With an operation then there is also the possibility of its converting a convergent squint into a divergent form.

It might be of interest to refer to the wonderful mechanism of co-ordination and balance brought about by the six delicate ocular muscles

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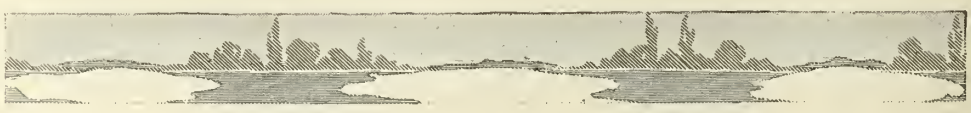

Minnesota State Medical Association

ANNUAL MEETING

October 1st, 2nd and 3rd, 1919

MINNEAPOLIS, MINNESOTA

MINNESOTA STATE MEDICAL ASSOCIATION
OFFICERS—1920

PRESIDENT.
J. H. Adair, M. D. - - - - - - - Owatonna
FIRST VICE-PRESIDENT.
E. M. Clay, M. D. - - - - - - Renville
SECOND VICE-PRESIDENT.
C. B. Lewis, M. D. - - - - - - St. Cloud
THIRD VICE-PRESIDENT.
H. C. Cooney, M. D. - - - - - Princeton
SECRETARY.
Earle R. Hare, M. D. - - - Minneapolis
TREASURER.
F. L. Beckley, M. D. - - - - - St. Paul
COUNCILOR—FIRST DISTRICT.
C. E. Dampier, M. D. (2 years) - - Crookston
COUNCILOR——SECOND DISTRICT.
J. G. Millspaugh, M. D. (3 years) - Little Falls
COUNCILOR—THIRD DISTRICT.
W. A. Dennis, M. D. (3 years) - - St. Paul
COUNCILOR—FOURTH DISTRICT.
R. J. Hill, M. D. (2 years) - - Minneapolis
COUNCILOR—FIFTH DISTRICT.
H. M. Workman, M. D. (3 years) - - Tracy
COUNCILOR—SIXTH DISTRICT.
F. R. Weiser, M. D. (1 year) - - - Windom
COUNCILOR—SEVENTH DISTRICT.
F. A. Dodge, M. D. (2 years) - - Le Sueur
COUNCILOR—EIGHTH DISTRICT.
W. F. Braasch, M. D. (3 years) - - Rochester
MEMBERS OF THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION.
DELEGATES.
W. H. Magie, M. D. (1 year) - - - Duluth
J. W. Bell, M. D. (2 years) - - Minneapolis
ALTERNATES.
J. L. Rothrock, M. D. (1 year) - - St. Paul
A. E. Spalding, M. D. (2 years) - - Luverne

MINNESOTA STATE MEDICAL ASSOCIATION.

Minutes of the Fifty-First Annual Session, held at Minneapolis, October 2 and 3, 1919.

OCTOBER 2—JOINT SESSION OF THE MEDICAL AND SURGICAL SECTIONS.

The Association met in the Gold Room of the Hotel Radisson and was called to order at 9:20 A. M. by the President, Dr. George Douglas Head, Minneapolis, who said:

Members of the Minnesota State Medical Association: I think we are to congratulate ourselves on having such a splendid representation of the Association at this early morning meeting. I am sure, if the mayor were here he would appreciate the effort that you gentlemen have made to get out to hear him talk. Unfortunately, the Secretary has just telephoned me the mayor has been called suddenly to St. Paul on a very important matter, and he intended to be back here in time to address us this morning, and the mayor's secretary asked if our session could not be continued and other speakers introduced until 10 o'clock when he would be here and give his address. I told the secretary that inasmuch as the scientific sessions of the association started promptly at 9.45, and that inasmuch as the men were to be separated and would meet in different places, so soon as this general meeting was over, it would be impossible to make this arrangement to hear the mayor. It did not seem to me possible for us to reasonably do otherwise, so that we are met here this morning to organize our usual annual meeting. The mayor's secretary wished me to extend for him the freedom of the city to all of you gentlemen and express also the pleasure that the citizens of Minneapolis will have in entertaining the association at this time in this city.

This summer I had the privilege while in military service near Boston to be invited as the official head of this organization to the one hundred and thirty-second annual dinner of the Massachusetts State Medical Society, and when I saw on the menu of the dinner that statement it gave me a sort of a shock because always having lived in the west, and never having attended any of the formal functions of state associations in the eastern cities, I have been in the habit of seeing the tenth annual dinner or twentieth annual dinner, and possibly I can remember a few thirtieth annual dinners, but farther back than that I could not recollect.

I believe we are opening today the fifty-first annual meeting of this association. We have still all of the attributes of youth, or we should have, and I believe we do have, because in being in the east and mingling with medical men, I feel and believe, without any prejudice whatsoever, that the greatest enthusiasm and energy in the work of the medical profession of this country is gradually gravitating from the east towards the central and central western portions of the country. I think we have the attributes of the pioneer, especially in the enthusiasm generated, and considering the freedom from

the old established order of things and the vigor that goes into every movement associated with young organizations, I believe we have a tremendous advantage. We have the advantage of the conservatism of the east; we are permitted to go there and scientifically and professionally secure all the benefits which they can give us; at the same time, we have all the spirit of the pioneer, and I think we should take advantage of it and should foster it, and should harbor and foster those elements which are the strength of any movement inaugurated in the interests of science or of our profession. (Applause.)

I have nothing further to say at this time. There are some announcements to be made before the various scientific sessions of the association begin, and I am going to ask Dr. White, who is Chairman of the Entertainment Committee, to make those announcements.

ANNOUNCEMENTS BY DR. WHITE.

DR. S. MARX WHITE: Mr. President, Ladies and Gentlemen: Dr. Head in mentioning the one hundred and thirty-second annual meeting of the Massachusetts State Medical Society mentioned the most important meeting of that association which was the banquet. So I suppose in our announcements the first thing to be mentioned and emphasized is the banquet. As illustrated by what he said, most of you do not read your programs through entirely, so that some of the things I shall mention will be found in the last leaf of the program. There are some annotations and corrections to which I want to call your attention.

The banquet will be held in this room this evening at 6:30 o'clock; tickets can be obtained at the registration booth. The committee is anxious that you should secure these tickets as early as possible in order that full preparations can be made, and I think I can assure you that those preparations will be full. The Committee on Banquet has taken great interest in this, and I think you will find it entertaining aside from the program. The program itself is one that I believe will be of unusual interest to you. President Burton of the University of Minnesota will address us, and Dr. W. W. Herrick, of Columbia University, comes from New York to address on "Miningococcus Infection, Including Cerebrospinal Fever." That sounds rather a simple affair, but Dr. Herrick has been doing some work that has distinctly revolutionized the treatment of cerebrospinal meningitis, and after hearing him in his original presentation in May, 1918, I am sure there is a treat in store for you this evening.

The Minnesota Alumni Luncheon will be given Friday, October 3rd at 12:30 at the tea room. No arrangements have as yet been made for other alumni meetings, but the committee is anxious that if you desire any other alumni meetings, that you arrange for them tomorrow and post the announcement on the bulletin board.

The women physicians of Minneapolis are giving a luncheon for the visiting women physicians at the Teako Inn in front of the Radisson Hotel at 12:15 today.

Those who expect to attend that luncheon are asked to leave their names with Dr. Warwick or with Mrs. Christiansen at the registration desk.

At 6 o'clock today the Women's Auxiliary of the Hennepin County Medical Society will give a dinner and musicale at Hotel Radisson for the wives and daughters of visiting physicians. This is to be a very attractive program, and any of you who have your ladies with you are requested to see that arrangements are made at that booth for that luncheon. Some of the best artists in the city are giving their services, and the program will be unusually attractive.

On Friday (tomorrow) at 2 o'clock an automobile ride will be given.

There is one further announcement about the clinics to be given Saturday. If you have watched the bulletin board you will see they are bulletined there for your convenience. There will be clinics all day Saturday.

Dr. Litzenburg, President of the Hennepin County Medical Society, has asked me to call your attention to an announcement of some lectures in medicine which are to be given by Dr. George Dreyer, of Oxford, Professor of Pathology in Oxford University. These lectures are given under the auspices of the Graduate School of the University of Minnesota and of the Mayo Foundation, and they are six in number. Dr. Dreyer will lecture in Minneapolis on Wednesday, Thursday and Friday of next week, October 8, 9 and 10.

The Minnesota Academy of Ophthalmology and Oto-Laryngology will hold a dinner on Friday evening, October 3 at 6:30 at the Minneapolis Club. The invited guest is Dr. H. Gifford, of Omaha, whom I presume will give an address. Of that I am not sure. All members of the Academy and their friends are cordially invited to attend this dinner.

There seems to have been some misunderstanding with relation to the presence of women physicians at the annual dinner tonight. The dinner the ladies are giving in the Empire Room is for visiting ladies The women physicians are expected to be present at the annual dinner held in this room with all other physicians, and that should be made perfectly clear. Provision is being made for them and they are expected to be at the dinner, and not dine with the visiting ladies in the Empire Room.

THE PRESIDENT: When we adjourn this meeting, we adjourn to meet in two sections, one the Section on Medicine, and the other the Section on Surgery.

SECTION OF MEDICINE.

FIRST DAY

THURSDAY, OCTOBER 2, 1919.

MORNING SESSION.

The meeting was called to order by the Chairman, Dr. E. L. Tuohy, Duluth, at 9:50 A. M.

DR. C. N. HENSEL, St. Paul, read a paper entitled "Protein Sensitization in Bronchial Asthma and Hay Fever".

DR. A. H. SANFORD, Rochester, presented a paper entitled "Protein Sensitization in Asthma".

These two papers were discussed by Drs. H. L. Ulrich, Minneapolis; W. W. Herrick, Columbia University, New York; Rood Taylor, Minneapolis; C. N. Hensel and A. H. Sanford.

DR. F. A. WILLIUS, Rochester, read a paper on "Auricular Fibrillation and Life Expectancy." Discussed by Drs. S. Marx White, Minneapolis; E. L. Tuohy, Duluth; L. A. Nippert, Minneapolis; S. P. Rees, Minneapolis; J. W. Bell, Minneapolis; C. N. Hensel, St. Paul; M. M. Ghent, St. Paul; and F. A. Willius.

DR. W. A. PLUMMER, Rochester, presented a paper entitled "Tuberculosis of the Thyroid". Discussed by Drs. W. W. Herrich, Columbia University, New York; E. L. Tuohy, Duluth; George Douglas Head, Minneapolis; and W. A. Plummer.

Pursuant to a suggestion from Dr. H. Ritchie the Chairman asked for a motion relative to a longer term of office for the secretaries of the sections, since their function was so largely the making up of

programs and it was thought that a longer term of office increased their efficiency.

DR. J. W. ANDREWS, Mankato, moved that the House of Delegates appoint secretaries for a period of not less than two years. Seconded by Dr. S. Marx White and carried.

There being nothing further to come before the Section at this time, the meeting was declared adjourned until two P. M.

AFTERNOON SESSION.

The meeting was called to order by the Chairman, Dr. E. L. Tuohy, Duluth, at 2:00 P. M.

DR. J. A. WATSON, Minneapolis, read a paper entitled "Vertigo: Its Causes and Their Determination". Discussed by Drs. E. S. Strout, Minneapolis; Arthur S. Hamilton, Minneapolis; and J. A. Watson.

DR. H. L. STAPLES, Minneapolis, presented a paper entitled "Observations on Angina Pectoris." Discussed by Drs. Charles Lyman Green, St. Paul; L. A. Nippert, Minneapolis; and H. L. Staples.

DR. F. SCHAAF Minneapolis, read a paper on "Blood Transfusion: Methods and Indications with Special Reference to its Sustaining Value in Pernicious Anemia." Discussed by Drs. H. Z. Giffen, Rochester; A. H. Sanford, Rochester; J. G. Cross, Minneapolis; J. P. Schneider, Minneapolis; E. L. Tuohy, Duluth; J. W. Andrews, Mankato; C. N. Hensel, St. Paul and F. Schaaf.

MARGARET WARWICK and CHARLES E. NIXON, Minneapolis, presented papers on "The Colloidal Gold and Other Cerebro-spinal Fluid Reactions." Discussed by Drs. S. Marx White, Minneapolis and Charles E. Nixon.

As this closed the program for the day the meeting was declared adjourned until Friday morning.

SECOND DAY.

FRIDAY, OCTOBER 3, 1919.

MORNING SESSION

The meeting was called to order by the Chairman, Dr. E. L. Tuohy, Duluth, at 9:10 A. M.

DR. L. G. Rowntree, Minneapolis, presented a paper of "Diabetes Insipidus." Discussed by Drs. A. H. Beard, Minneapolis; Rood Taylor, Minneapolis; and L. G. Rowntree.

DRS. JOHN BUTLER, H. G. IRVINE and S. E. SWEITZER, Minneapolis, presented a paper on "Methods of Handling Dermatological and Luetic Cases in the Dispensary." Discussed by Drs. Henry E. Michelson, Minneapolis; N. L. Linnemann, Duluth; E. Z. Shapiro, Duluth; L. G. Rowntree, Minneapolis; C. Eugene Riggs, St. Paul; and S. E. Sweitzer.

DR. E. J. HIRSCHBECK, Duluth, read a paper on "Clinical Aspects of Hypertension." Discussed by Drs. J. P. Schneider, Minneapolis; H. L. Ulrich, Minneapolis; E. L. Tuohy, Duluth; S. P. Rees, Minneapolis; Charles B. Wright, Minneapolis; C. Eugene Riggs, St. Paul; M. N. Leland, Minneapolis; O. R. Bryant, Minneapolis; and E. J. Hirschbeck.

DR. C. R. BALL, Minneapolis, read a paper entitled "Neurology and Psychiatry in the War." Discussed by Dr. C. Eugent Riggs, St. Paul.

As this closed the program of the Section on Medicine, the meeting adjourned to reconvene in joint session with the Section on Surgery at 2:00 P. M.

MINUTES OF THE SECTION ON SURGERY.

Chairman, Dr. R. E. Farr; Dr. H. P. Ritchie, Secretary.

OCTOBER 2—FIRST SESSION

The section was called to order at 9:45 A. M. by the Chairman.

Dr. A. C. Strachauer, Minneapolis, read a paper entitled "A new Operation for Empyema."

Dr. F. M. Manson, Worthington, read a paper entitled "Treatment of Empyema by the Closed Method."

These two papers were discussed by Drs. Arthur T. Mann, Minneapolis; O. C. Strickler, New Ulm; H. R. Weirick, Hibbing; Arthur H. Collins, Duluth; Charles H. Mayo, Rochester; Theodore Bratrud, Warren; A. R. Colvin, St. Paul, after which the discussion was closed by the authors of the papers.

Dr. Arthur T. Mann, Minneapolis, contributed a paper entitled "The Use of the Carpenter's Mallet in Severe Cases of Pott's Fracture and Some Other Complications in Fractures."

The paper was discussed by Drs. Earle R. Hare, Minneapolis; F. A. Schmitt, Mankato; and in closing by the essayist.

Dr. A. A. Law, Minneapolis, presented a paper on "War Wounds of the Major Joints," which was discussed by Drs. John Staley, St. Paul; Harry Zimmermann, St. Paul; F. A. Dunsmoor, Minneapolis, and Charles A. Reed, Minneapolis.

Dr. H. W. Meyerding, Rochester, read a paper on "Treatment of Tuberculosis of the Spine," which was discussed by Drs. C. C. Chatterton, St. Paul; Charles A. Reed, Minneapolis, and in closing by the essayist.

On motion, the section adjourned until 2 P. M.

SECOND SESSION.

The section reconvened at 2 P. M. and was called to order by the Chairman.

Dr. A. L. McDonald, Duluth, read a paper on "Tumors of the Omentum," which was discussed by Drs. Arthur T. Mann, Minneapolis; H. E. Robertson, Minneapolis, and discussion closed by the essayist.

Dr. H. A. Bouman, Minneapolis, read a paper entitled "Carcinoma of the Thyroid."

This paper was discussed by Drs. Gustav Schwyzer, Minneapolis; H. E. Robertson, Minneapolis, and L. B. Wilson, Rochester, after which the discussion was closed by the author of the paper.

Dr. Warren A. Dennis, St. Paul, read a paper on "Results in Cholecystectomy," which was discussed by Drs. E. Starr Judd, Rochester; Earle R. Hare, Minneapolis; Charles H. Mayo, Rochester; Archibald MacLaren, St. Paul; A. C. Tingdale, Minneapolis, and discussion closed by the author of the paper.

Dr. W. A. Coventry, Duluth, presented a paper on "Prolapse of the Uterus," which was discussed by Drs. Archibald MacLaren, St. Paul; J. Warren Little, Minneapolis; A. E. Benjamin, Minneapolis; A. L. McDonald, Duluth, after which the discussion was closed by the essayist.

Dr. J. Warren Little, Minneapolis, contributed a paper entitled "Rational Treatment of Carcinoma of the Uterus."

The paper was discussed by Drs. J. C. Litzenburg, Minneapolis; Robert Earl, St. Paul; F. A. Dunsmoor, Minneapolis, after which the discussion was closed by the author of the paper.

On motion, the section adjourned until 9 A. M., Friday.

OCTOBER 3—THIRD SESSION

The section met at 9 A. M. and was called to order by the Secretary of the Section, Dr. Harry P. Ritchie, in the temporary absence of the Chairman.

Dr. A. S. Hamilton, Minneapolis, read a paper entitled "Nerve Surgery, the Diagnosis."

Dr. James F. Corbett, Minneapolis, read a paper on "Nerve Surgery: Treatment."

These two papers were discussed jointly by Drs. A. W. Morrison, Minneapolis; Arnold Schwyzer, St. Paul; C. F. Dike; O. E. Bratrud, Fertile; E. K. Green,

Minneapolis; E. H. Marcum, Bemidji; after which the discussion was closed by the essayists.

Dr. A. W. Adson, Rochester, read a paper entitled "Surgical Treatment of Trifacial Neuralgia."

Discussed by Drs. C. R. Ball, St. Paul; L. C. Bacon, St. Paul; William L. Benedict, Rochester; Edward J. Brown, Minneapolis, and in closing by the essayist.

Dr. George C. Dittmann, St. Paul, presented a paper on "Paralysis of the Abducens Nerve Secondary to Mastoiditis," which was discussed by Dr. H. I. Lillie, Rochester.

Dr. J. D. Lewis, Minneapolis, read a paper entitled "Correction of External Deformities of the Nose."

This paper was illustrated by numerous slides, and was discussed by Drs. Gordon B. New, Rochester; F. J. Pratt, Minneapolis; after which the discussion was closed by the essayist.

On motion, the section adjourned until 2 P. M.

AFTERNOON SESSION—JOINT SESSION WITH THE MEDICAL AND SURGICAL SECTIONS.

The meeting was called to order by the President, Dr. George Douglas Head, who said:

The new President of the Association is one of our oldest and most respected practitioners in this state. He is fully worthy of the honor that has been conferred upon him by the House of Delegates. I am going to ask Drs. R. J. Hill and J. H. James to escort Dr. J. H. Adair, of Owatonna, to the platform.

On reaching the platform Dr. Adair was very enthusiastically received, and after the applause had subsided, President Head said: Dr. Adair was much opposed to any move of this sort, and I only got him on the platform on the promise that we would not call on him to make a speech.

I will ask Dr. S. H. Boyer, of Duluth, First Vice-President of the Association, to take charge of the meeting.

VICE-PRESIDENT BOYLE: We will now listen to the President's Address. He has chosen for his subject "Reconstruction in Medical Education."

Before beginning his address, President Head said: I want to express my appreciation of this great honor. I esteem it a very high privilege to be elected to the presidency of the Minnesota State Medical Association, and I am sure I shall cherish this honor as long as I live. (Applause.)

President Head then delivered his address.

The following papers were read and then discussed together:

Dr. William F. Braasch, Rochester, read a paper entitled "Recent Methods in Diagnosing Surgical Diseases of the Urinary Tract."

Dr. Frank S. Bissell, Minneapolis, followed with a paper on "Rontgenology of the Urinary Tract."

Dr. L. G. Rowntree, Minneapolis, presented a paper on "Diagnosis and Treatment from a Medical Viewpoint."

Dr. E. Starr Judd, Rochester, read a paper on "The Surgical Treatment of Diseases of the Kidney."

The Symposium was discussed by Drs. Gilbert J. Thomas, Minneapolis; S. Marx White, Minneapolis; J. Warren Little, Minneapolis, after which the discussion was closed by Dr. Rowntree.

Dr. H. M. Workman, Tracy, moved that inasmuch as the service rendered to the association by the telephone exchange had been very efficient, that the association tender them a vote of thanks.

Seconded and carried.

The Secretary of the Association, Dr. Hare, presented a resume of the proceedings of the House of Delegates. (For particulars, see proceedings of the House of Delegates.)

As there was no objection, the report of the Secretary was accepted and ordered to be so recorded.

There being no further business to come before the meeting, on motion, which was duly seconded and carried, the association adjourned to meet in St. Paul in 1920.

MINNESOTA STATE MEDICAL ASSOCIATION. MINUTES OF THE FIFTY-FIRST ANNUAL MEETING, HELD AT MINNEAPOLIS OCTOBER 1, 2 and 3, 1919.

PROCEEDINGS OF THE HOUSE OF DELEGATES.

FIRST SESSION—WEDNESDAY, OCTOBER 1, 1919.

The House of Delegates met in the library rooms of the Hennepin County Medical Society, and was called to order at 2:20 P. M. by the President, Dr. George Douglas Head, Minneapolis, who said: The first matter of business in connection with the meeting of the House of Delegates is the appointment of a Committee on Credentials.

The chair will appoint Drs. Cross, Beebe, and Newman, as a Committee on Credentials.

The chair would suggest, in order to expedite business, that some of the matters that ought to come before the House of Delegates be heard and discussed while this committee is getting ready to make its report. If I hear no objection to that action on the part of the House of Delegates, we will proceed with the third item in the order of business, namely, the reading of the minutes of the last meeting by the secretary.

DR. R. J. HILL: Unless there is something special in the minutes to be called to the attention of the members of the House of Delegates, I would move that the minutes as published be approved.

Motion seconded and carried.

THE PRESIDENT: The next item is the report of the secretary. The secretary presented his report, as follows:

REPORT OF THE SECRETARY

One year ago we were in the last throes of the world's greatest military conflict. A large percentage of our membership was engaged in active government service.

We were just then entering upon the influenza epidemic which was so disastrous to our country.

These two factors combined to disorganize and disrupt to a large degree many of our component societies. The year has been a most trying one. The termination of the epidemic, and the return of our members from army service, has had a most beneficial effect on our association as a whole, and we stand with a full roster, our organization composed of thirty-nine component societies. These societies are well manned, and for the most part have conducted regular and profitable meetings.

From a legal point of view, we have had a fortunate year, in that but four malpractice suits have been filed against our members. There are now eight cases pending in court. Five have been concluded during the year. One verdict for $500 was rendered against one of our members and was paid. Four cases were decided in favor of the defendants. One case appealed to the supreme court, sustained a verdict in favor of the doctor. This was a hard fought case and is a notable victory for the defendant.

At its regular session our State Legislature enacted a law, House File 228, an act defining and regulating the practice of chiropractic in the State of Minnesota, and creating a State Board of Chiropractic examiners. There seemed to be a great demand for the enactment of this law, and it was passed without opposition on the part of our profession. Your secretary desires to suggest that each member of this

House secure a copy of this act and study it carefully in order that he may be fully informed as to the activities of this new branch of those who practice the healing art.

Our membership is now about normal.

At this time we have 1,534 members—of these 368 were on the honor roll, and their memberships continued for the most part, without payment of dues, for the time they were in service.

It is evident that this number does not truly represent all members who were in service, as it is quite impossible to secure accurate reports in every case.

Your Secretary desires to impress upon each delegate the importance and the desirability of each component society during the coming year, of making an active effort to secure for membership, every eligible physician within its jurisdiction. Only in this way will it be possible to bring into actual existence the thing for which we stand, viz., to promote friendly intercourse among physicians, and bring into one compact organization the entire medical profession of the State of Minnesota.

Permit me to place before you our membership by component societies:

Society.	Members	Honor Roll
Aitkin County	4	1
Blue Earth County	29	8
Blue Earth Valley	23	5
Brown-Redwood County	31	7
Camp Release	42	7
Carlton County	6	..
Central Minnesota	11	2
Chisago-Pine County	14	1
Clay-Becker County	21	5
Dodge County	8	1
Freeborn County	14	7
Goodhue County	16	5
Hennepin County	353	78
Houston-Fillmore County	26	9
Jackson County	11	3
Kandiyohi-Swift County	15	..
Lyon-Lincoln County	16	5
McLeod County	10	2
Meeker County	23	3
Nicollet-Le Sueur County	19	7
Olmstead County	65	20
Park Region District	31	—
Ramsey County	256	84
Red River Valley	42	5
Rice County	21	6
St. Louis County	128	19
Scott-Carver County	20	5
S. W. Minnesota	40	12
Stearns-Benton County	41	12
Steele County	12	4
Upper Mississippi	80	19
Wabasha County	13	4
Waseca County	10	3
Washington County	14	1
Owatonna	7	1
Watonwan County	7	1
West Central	18	5
Winona County	23	5
Wright County	12	4
Total	1534	368

The Secretary now desires to report the receipt of $5,155.00 from January 1st to September 24th, 1919. This amount has been sent to the Treasurer.

Finally let us turn our attention for just a moment to one great purpose of our association, and that is to "enlighten and direct public opinion in regard to the great problems of state medicine," so that the profession shall become more capable and honorable within itself, and more useful to the public in the prevention and cure of disease and in prolonging, and adding comfort to life."

Respectfully submitted,

EARLE R. HARE, Secy.

730 LaSalle Building, Minneapolis, Minn.
September 30, 1919.

Action on the report of the secretary was deferred until the presentation of the report of the Committee on Credentials.

The Treasurer presented his report, as follows:

MINNESOTA STATE MEDICAL ASSOCIATION

Annual statement of the Treasurer covering period—January 1st, 1919, to October 1st, 1919.

RECEIPTS

Minnesota Medicine	$ 4,125.56
Dr. E. R. Hare, sec'y dues	5,155.00
Interest—Bonds and balances	155.37
Bonds	4,000.00
Cash on hand Jan. 1st, 1919	256.43
Warrants unpaid No. 133,135	4.00
	$13,696.36

DISBURSEMENTS

Minnesota Medicine	$ 4,866.91
Dr. E. R. Hare, office exp	354.85
Salaries	250.00
Bond premiums, sec'y and treas	32.50
Returned dues	52.00
Legal expense	500.17
Bonds	4,000.00
Cash on hand Sept. 29, 1919	3,630.73
Sundries	9.20
	$13,696.36

F. L. BECKLEY, Treasurer.

MINNESOTA STATE MEDICAL ASSOCIATION

Moneys received from E. R. Hare, secretary, Jan. 1st, 1919, to Oct. 1st, 1919, itemized as to societies:

Aitkin County	$ 12.00
Blue Earth County	84.00
Blue Earth Valley	72.00
Brown-Redwood County	96.00
Camp Release	144.00
Carlton County	24.00
Central Minnesota	36.00
Chisago-Pine County	52.00
Clay-Becker County	64.00
Dodge County	32.00
Fillmore-Houston County	72.00
Freeborn County	28.00
Goodhue County	44.00
Hennepin	1,234.00
Jackson	32.00
Kandiyohi-Swift County	60.00
Lyon-Lincoln County	44.00
McLeod County	32.00
Meeker County	24.00
Mower County	80.00
Nicollet-Le Sueur County	48.00
Olmstead County	180.00
Park Region	124.00
Ramsey County	864.00
Red River Valley	148.00
Rice County	64.00
St. Louis County	444.00
Scott-Carver County	60.00
Southwestern Minnesota	160.00
Stearns-Benton County	120.00
Steele County	40.00
Upper Mississippi	320.00
Wabasha County	36.00
Waseca County	28.00
Washington County	52.00
Watonwan County	24.00
West Central	56.00

Winona County	72.00
Wright County	40.00
Additional Dues	9.00
Total	$5,155.00

F. L. BECKLEY, Treasurer.

Action on the report of the Treasurer was also deferred until after the presentation of the report of the Committee on Credentials.

DR. J. G. CROSS presented the report of the Committee on Credentials, giving a list of the delegates and alternates present, making a total of 26.

The President declared a quorum present and the House of Delegates ready for the transaction of business.

It was moved and seconded that the reports of the secretary and treasurer be accepted.

Seconded and carried.

THE PRESIDENT: We will now listen to the report of the attorneys, which will be read by the secretary.

The secretary read the report of the attorneys, as follows:

REPORT OF THE ATTORNEYS.

September 26, 1919.

Dr. Earle R. Hare,
Secretary,
Minnesota State Medical Association,
730 LaSalle Building,
Minneapolis, Minnesota.

Dear Sir:

In answer to your letter of the 23rd instant, for a complete report of the work done by us from September 1st, 1918, to September 31st, 1919, for presentation to the State Association, we beg to advise as follows:

Demarais vs. Norman—Case pending in Polk County, Minnesota District Court. We advised you with reference to this case in our report to you of April 1st last. Nothing further has been done in the matter, except to place the case on the next term of court calendar.

Brehmer vs. Utley—No further developments since our report to you of August 3, 1918. The case is still pending undetermined,

Bressler vs. Stuart—Action for alleged malpractice X-ray burn. Verdict for the doctor. No appeal.

Peterson vs. Branton—Supreme Court reversed verdict for $3,000; second trial verdict rendered for $500. Paid by doctor who did not care to have appeal taken.

Nelson vs. Farrish and Portmann—A full report was made to you in this matter on August 1st, last. You will remember that the Supreme Court on that day affirmed the judgment of the Lower Court, in favor of the doctor.

King vs. Eshelby—Suit for malpractice pending in Ramsey County, Minnesota, District Court, growing out of injury to arm occasioned by reason of an alleged fall. All pleadings have been served and the case noticed for trial, but not set down for a day certain.

Crol vs. Nye—Suit brought by inmate of Salvation Army Rescue Home, St. Paul, against Dr. Katherine A. Nye,—all pleadings have been served and the case is at issue, although no definite date has been set.

Dennis, Gilfillan & Staley vs. Anderson—Depositions are being taken in this matter,, the case being in the Municipal Court at Crosby. Case pending and undecided.

Ernest Gabbard vs. Dr. Robert S. Brown—Pending in the Municipal Court of Minneapolis. All pleadings have been served, the case has been noticed for trial, but no definite date set for the trial thereof.

Fannie Gabbard vs. Dr. Robert S. Brown—Pending in the Municipal Court, of Minneapolis. This is an action for alleged malpractice in using hypodermic needle. All pleadings have been served, but no definite date set for the trial of the case. The former mentioned action is one for the loss of services of the wife, Fannie Gabbard.

Flora Woodruff vs. Dr. T. C. Clark—This is an action brought by an inmate of the Minnesota Soldiers' Home, the case having been begun in Minneapolis, and the venue changed to Washington County, Stillwater, Minnesota. All pleadings have been served, and the case set for the 24th of November, 1919.

Gregory vs. McIntyre—(Two cases). One of these cases was for the benefit of the infant plaintiff, and the other was for the benefit and in behalf of the parent. Dr. McIntyre in these cases was charged with negligence in removing the tonsils of the infant. At the trial on December 4th, last, we procured dismissals of the two cases, and so advised your Association on that day.

Yours very truly,
MOORE, OPPENHEIMER & PETERSON.

Per M.

THE PRESIDENT: What will you do with this report?

DR. LITZENBERG: I move that it be accepted and placed on file.

Motion seconded and carried.

THE PRESIDENT: The next order of business is the report of the Chairman of the Councilors, but before I ask Dr. Hill to present his report, your president would like to take a few minutes to say a word or two with relation to the business that is to come before the House of Delegates. I feel as if a precedent might well be established. Perhaps it is not a precedent, and it may have been done in the past, but it has seemed to me in going over with Dr. Hare the work to come before the House of Delegates that the President of the Association ought to call to the attention of the House of Delegates any matters of importance that come to his notice or to the notice of the officers of the Association during the year, and I would like to take a few moments to call attention to some matters, and I do it at this point for this reason that as we proceed with the reports of the committees and the business, these various matters can be taken up and adjusted by the House of Delegates as they come in our order of business. If the President waits until the committees have reported and the business is transacted, it is too late to get in the recommendations.

First of all, our attention has been called by different members of the Association to the public health propaganda which is sweeping over the country, with which you are all familiar. It is very important and necessary that this work should be carried along proper channels, and that the profession should have a guiding hand in the method by which this propaganda is carried on. There can be no doubt, gentlemen, but what a tremendous interest is being taken in preventive measures in public health and we should join in and will join interests with the interests of the laymen in furthering this very important movement.

The President would therefore recommend that the incoming president of the Association appoint a committee of three members on public health to represent this Association in the large work to be undertaken in public health matters in this state. That is purely a representative committee that could be called in at any time to represent this Association. When the proper time comes that recommendation, if it is worth anything, can be acted upon.

In the second place, with relation to the organization of this House of Delegates for work. I have been wonderfully impressed in the times I have been fortunate enough to work in the House of Delegates of the American Medical Association with the splendid

methods by which business is disposed of. It is one of the most ideally organized administrative legislative bodies that I have any knowledge of, and it has struck me that our own Association might very well comprise some of the best elements of the organization of the American Medical Association in the conduction of our own work.

The President would suggest that a special committee of five members be appointed by the incoming president to formulate a plan for the transaction of the business of this House of Delegates through the Reference Committee system now in use by the American Medical Association, and that said committee report at the next meeting of this Association, consider it in the interim and report as to the advisability of adopting it.

The chief advantage of that, as I see it, is that oftentimes important matters come up here that require study and time to consider. If we have appropriate Reference Committees to whom these important matters can be referred, it gives that committee or committees a year over which to study the questions at issue, the advisability of the House of Delegates taking action, and so forth, and reporting at a subsequent meeting. Inasmuch as we meet only two days, there is scarcely time for any deliberate consideration of any important matter, and I am quite sure the House of Delegates can very well use that method of procedure to advantage.

In the third place, our secretary has received a number of communications, one in particular, with relation to the control of cancer, and I will just read from a letter sent by the American Society for the Control of Cancer.

> With the return of peace the campaign for the dissemination of knowledge about cancer is being actively resumed both among the laity and within the profession. In the latter field the State Medical Associations will naturally take the lead. The American Society for the Control of Cancer seeks to help, and now earnestly renews its suggestion that standing committees or commissions for the study and control of cancer be appointed by each State Association with carefully selected and continuing membership rather than with annual rotation.

I am sure that one pernicious thing with relation to the rotation of committees is that a man no sooner acquires a little knowledge in regard to a subject before he is deposed and another individual put on that committee. A committee of this sort ought to be a standing committee, and the membership, as I see it, ought to exist for a three-year period. Therefore, the President recommends a standing committee on Control of Cancer to consist of three members to be appointed by the incoming president to serve for three years.

There is still one further matter which I wish to bring to the attention of the House of Delegates.

At the last annual meeting of this Association, the following resolution was passed: "That the Brown-Redwood County Society be instructed to bring Dr. L. A. Fritsche of New Ulm to trial on the evidence submitted to the Public Safety Commission, and to submit the entire proceedings to the Council of the Minnesota State Medical Association before the expiration of three months, and failure to bring him to trial will result in the revocation of the Charter of the Brown-Redwood County Medical Society."

Your President has carefully read over the transcript of the proceedings of the Brown-Redwood County Society, dealing with the Dr. L. A. Fritsche matter. The Brown-Redwood County Society failed to secure the evidence submitted to the Public Safety Commission and failed to try Dr. L. A. Fritsche upon this evidence and failed to submit to the Council of the Minnesota State Medical Association the decision relative to Dr. L. A. Fritsche's guilt or innocence. According to the terms of the resolution, therefore, the Brown-Redwood County Society, failing to follow the instructions of this Association, subjects itself to the revocation of its Charter by the Minnesota State Medical Association.

I wish to call the attention of the House of Delegates to the importance of a decision in this matter, in view of the grave charges of disloyalty placed upon one of the members of this Association, Dr. L. A. Fritsche of New Ulm, who was declared guilty of said charge on evidence submitted to the Public Safety Commission.

These are all the matters I have to present.

The next order of business is the report of the Chairman of the Councilors, Dr. R. J. Hill.

DR. HILL: The Councilors met this morning at eleven o'clock with a full quorum present and transacted routine business. They examined the accounts and vouchers of the Treasurer and found them correct and so certified, and also the Secretary's report which corresponded with that of the Treasurer.

There was no question brought before the Councilors of any disturbance in any section of the state by any Councilor, with the exception of this matter of the Brown-Redwood County Society.

Early in the year, at the suggestion of our President, I made an effort to get the transcript from the Public Safety Commission that was used in the trial of Dr. Fritsche, and finally succeeded in getting it. The matter was never brought before the Council, for the reason that the Council is a body to try cases and not to initiate a trial. There was no charge preferred. We tried to get some member of the Brown-Redwood County Society to offer an objection to the findings of the Society, thus enabling us to take the matter up. We thought at one time we would succeed, but finally failed, so that the Council never took the matter up finally at all.

I have here the evidence from the Public Safety Commission that tried Dr. Fritsche. As a matter of fact, Dr. Fritsche never was tried according to the instructions of the State Medical Association, because he appeared by attorney before the Brown-Redwood County Society and his attorney ran the trial, and the attorney constantly in this transcript of the testimony advised his client not to answer questions, not to pay any attention to the procedure because this is not evidence which was submitted. He was not on trial. Finally, in the last resolution which they passed and which cleared Dr. Fritsche, a resolution was introduced before the Brown-Redwood County Society by Dr. Fritsche's attorney, who had no business to be there whatever. He conducted the whole procedure. (Here Dr. Hill read extracts from the proceedings.)

Dr. Workman is Councilor for that district, and I call on him to make some further explanation in regard to this matter.

DR H. M. WORKMAN: I appeared at this meeting as Councilor. I took the position I was there simply as a spectator on behalf of this Association representing the House of Delegates. I did not want to advise, nor did I attempt to advise, that Society what they should do. I said so long as the evidence submitted was satisfactory to the Governor to remove Dr. Fritsche from office, it would be accepted as evidence by this House of Delegates. Mr. McDermott, Dr. Fritsche's attorney, a very pleasant gentleman, said that it did not make any difference with his client; that he need not plead or pay any attention to what action this House of Delegates had taken. I do not know what further I can add. I did not notify them that that would not be the last, and while the President was not at this meeting, he has made a recommenda-

tion to the Council that the Charter of the Brown-Redwood County Society be arrested, and I now would move that that be the action of this House of Delegates.

THE PRESIDENT: You have heard the motion of Dr. Workman, Councilor from this district. Is there any second to the motion?

DR. R. E. FARR: I second the motion.

THE PRESIDENT: Are there any remarks?

DR. R. J. HILL: It seems to me, that is the only thing this House of Delegates can do consistently with their action. The Brown-Redwood County Society have ignored the instructions given them last year, and there has nothing been done. It is true, they instituted a white-wash, but it is not on any evidence submitted. On the evidence they were told to try him, so that I do not know of any other alternative for us than to revoke the license or charter, and that they reorganize the Society along identical lines and ask to come back. I do not think we can consistently admit delegates from that Society hereafter.

DR. J. A. EVERT: May I ask Dr. Workman how many members of the Society were present at that meeting?

DR. WORKMAN: I cannot recall the total number of men in the Society.

THE SECRETARY: I can give you the number. They now have 31 members.

DR. WORKMAN: There were five members who voted to sustain the motion of Mr. McDermott, and three were opposed. There were three or four other members who did not vote. Of course, in addition to these we must remember there were a good many men in that district, including Brown-Redwood County, who were in the service and could not vote.

DR. EVERT: It seems to me, that in a way it would be an injustice to a large number of members of this Society if this motion should prevail. As we all know, members of county societies are very apt to be lax in getting out to meetings, and those very men who do not show up are generally the backbone of the Society, and it is too bad to take away membership in the State Society from members who are in favor of staying in the House of Delegates.

DR. WORKMAN: I think this thing can be fixed all right. If this motion should carry, I would have those men petition the Council or the members from that section for a charter. If they are the right kind of men in the estimation of the Council they will be granted the Charter; if they are not the proper men, we can refuse to grant them a charter. There are plenty of good men in Brown-Redwood County that should have a charter and be members of this Association, and I believe they will come back.

DR. F. L. ADAIR: How many were absent in military service at this time?

THE SECRETARY: Seven.

DR. ADAIR: That is practically near the number who voted against this resolution, and it seems too bad to deprive men from membership in the local and state society who have been in military service on account of the action of this Society. Cannot this be referred back to the Society for action, so that the men who were away at the time and have since returned, can have their say in the matter, instead of depriving them immediately of their Charter?

DR. HILL: The Brown-Redwood County Society was ordered by the State Association to hold this trial within three months upon certain evidence. They ignored the whole thing, and the House of Delegates ought not to go back on that statement. We told them specificially if they did not try this man their Charter would be taken away from them. It is unfortunate for those men who were away and who are loyal. They can at once apply for a Charter and purge themselves of this disgrace, and there is no other way by which they can do it. It would be beneath the dignity of this House of Delegates to attempt to get around it. We told them what to do, and when to do it, within three months. They did not do anything within three months. They took the matter up at last when they were being called upon to do so.

THE PRESIDENT: Are there any further remarks?

DR. W. L. BEEBE: I would like to ask if any delegate or alternate of that country is present?

THE SECRETARY: We have a delegate on the list, but he is not present.

DR. ADAIR: Is the Charter already revoked in accordance with that resolution?

THE PRESIDENT: The chair would rule that the Charter of the Brown-Redwood County Medical Society is not revoked without special vote of this House of Delegates.

DR. E. W. BUCKLEY: It seems to me, we are in somewhat of a quandary. The primary purpose of this resolution is to secure the conviction of Dr. Fritsche and we charge certain people to convict him. If there is any suspicion of innocence, there would not be an order to try him in all probability. Failure to act on the resolution passed at the last meeting of the House of Delegates is now substituting the Brown-Redwood County Medical Society for Dr. Fritsche. We are making all of these members of that Society practically guilty of abetting Dr. Fritsche in his disloyalty. The taking away of the Charter of that Society will work a hardship on many innocent men. Their failure is undoubtedly due to the officers. If they called a meeting and did not have a quorum present, that would clear them under the terms of this resolution. We ought to move slowly in this matter before taking away their Charter for failure to try a man until we know whether the officers of the Society issued a call for the trial or not. Nothing of that kind has been shown here; at least, I have not heard it. While I have no sympathy with Dr. Fritsche, and no other member of this Society has any sympathy with him for the stand he has taken, and I have no doubt of his guilt in accordance with the findings by an outside body, yet it is a question of procedure whether we should want to punish the innocent as well as the guilty. Supposing we declare the Charter of this Society revoked, and then invite the supposedly innocent members of the Brown-Redwood County Medical Society to form another organization, there is nothing to prevent those members from taking Dr. Fritsche in again. The trouble is we have no direct control of the members of the component medical societies we are trying to reach. Before taking final action we ought to have a free discussion as to the object we desire to accomplish. I do not feel like voting for a motion which might exclude perfectly innocent members who are as anxious to have Dr. Fritsche expelled from membership in the Minnesota State Medical Association as we are. It may be the fault of the officers who failed to send out such a call. If that is true, that procedure would be against the county officers and not against the Society by revoking its Charter. Personally I would like a little more light on that subject before voting.

THE PRESIDENT: I would like to ask Dr Hill, chairman of the Councilors, to give us some additional information, if he can, on the point raised.

DR. HILL: At the beginning of the testimony submitted to the Public Safety Commission by the Brown-Redwood County Medical Society there were ten, including Dr. Workman, present at the opening meeting. T. J. McDermott appeared as counsel for

Dr. Fritsche. The meeting was regularly called. The president was not there, but it goes to show all the way through the attitude of the attorney who forbade his client to answer questions or to appear on the ground that the Society has no right to try him and had no evidence. This evidence was taken before the Public Safety Commission which were to try him on that evidence.

THE PRESIDENT: The report, as I understand it, sent to the Brown-Redwood County Medical Society by the Public Safety Commission was its final report condemning Dr. Fritsche for disloyalty and the reasons for the same, but not the evidence. The transcript of the evidence was never in the hands of the Brown-Redwood County Medical Society. Is not that true?

DR. HILL: I am not clear on that.

DR WORKMAN: I think that is true.

THE PRESIDENT: The evidence reposed in the archives in St. Paul, the questions and answers at the trial and the report of the findings of the Public Safety Commission were sent to the Brown-Redwood County Medical Society. Therefore, the Brown-Redwood County Medical Society never tried Dr. Fritsche on the evidence. That I think was very definite and clear.

DR BUCKLEY: I would like to know whether any member knows if an attempt was made by the officers of the Brown-Redwood County Medical Society to comply with the instructions issued to them by this House of Delegates.

THE PRESIDENT: Would you wish, Dr. Buckley, to have the transactions of this meeting read?

DR. BUCKLEY: I do not think the transactions would give me any information.

DR. WORKMAN: All I know is Dr. Reineke intimated that there were ten or nine, whatever the number was, present, and a question was not raised. The men that were present had received a notice. They waited for a while for the president of the Society to appear. He had been notified to appear, but did not come. Whether other members had been notified, I do not know, and I know of no way for me to ascertain.

DR. BUCKLEY: They were notified after the expiration of the time, were they not? This meeting was held after the expiration of ninety days.

DR. WORKMAN: Yes, a meeting was held.

DR BUCKLEY: But the meeting was not held within ninety days. It is important to know whether the meeting was held within the time they were ordered to have it. They could not be held responsible for the results of the trial. We told them to try and not to convict within ninety days. There is nothing to show, as I understand, whether that notice was sent out to comply with instructions given by the House of Delegates.

DR WORKMAN: I do not think this House of Delegates can try an individual member or an individual officer. We have no authority to do that. We could not try Dr. Fritsche. All we can try is the Society under the Constitution.

DR. R. E. FARR: It seems to me, we are wasting valuable time on this thing. We have certain definite rules, and we have voted to do a certain definite thing under certain conditions, and if other conditions prevailed we would do something else. The Brown-Redwood County Medical Society did not do what they were called together for and which they were morally bound to do. I think all of the good members of that Society will be good sports and make an effort to secure a Charter and keep the bad fellows out. I call for the question.

DR LITZENBERG: I would suggest that the wording of Dr. Workman's motion be amended to this effect, that inasmuch as the Brown-Redwood County Medical Society has not followed the instructions of the House of Delegates in the matter of trial of Dr. L. A. Fritsche, pursuant to the resolution passed by the House of Delegates last year, that the Charter of said Society be hereby revoked.

DR. FARR: I second the amendment.

DR WORKMAN: I accept the amendment.

The original motion as amended was adopted unanimously by a rising vote.

THE PRESIDENT: The next order of business is the report of the delegates to the American Medical Association, Dr. J. W. Bell.

Dr. Bell presented the following report:

REPORT OF THE DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION.

The Seventieth Annual Session of the American Medical Association was held at Atlantic City, June 9-13, 1919. The House of Delegates met in the Library of the Hotel Traymore and was called to order at 10:00 A. M. by Speaker, Dr. Hubert Work. The House of Delegates gave practically three days to the consideration and decision of the business of the Association. Full and complete stenographic reports of the meeting are given in the Journal issues of June 14th and 21st, 1919, to which reference may be made for detailed information. Owing to the unavoidable absence of Dr. W. H. Magie and the appointment of Dr. Geo. Douglas Head as delegate from the Section on Practice of Medicine, Alternates Drs. E. L. Tuohy, and John W. Bell were seated as Delegates from this Association. Dr. A. D. Hirschfelder, Delegate from the Section of Pharmacology and Therapeutics also participated actively in the work of the House of Delegates.

On the Reference Committees, Minnesota received recognition in the appointment of our worthy President as Chairman of the Committee on Sections and Section Work.

Speaker Work directed the deliberations of the House of Delegates so as to successfully minimize friction and accelerate the transaction of business. The Speaker's address, following fifteen consecutive years of service as a delegate, member of the Judicial Council, and as Speaker of the House of Delegates, contained many valuable suggestions, some of which will be referred to later.

The Secretary reported a membership of 82,288 May 1st, 1919, a gain of 2,640 members during the year. The Fellowship totaled 45,412, a net increase for the year of 697.

The Treasurer's Report showed a Reserve Fund at the close of 1918 of $208,727.38.

Dr. Thomas McDavitt Chairman of the Board of Trustees presented a carefully prepared report of the work of that important body during the past year. The increase in the subscriptions to the Journal for the Calendar Year 1918 was 229. The Advertising Department of the Journal made a more satisfactory showing, reaching $312,440.26,—the largest income from advertising in the Journal's history. This showing would indicate that there is no loss in maintaining a high advertising standard.

The problem of Social Insurance was brought to the attention of the House of Delegates by the exhaustive report of the Subcommittee on Social Insurance.

The importance and present status of this vital question will be best conveyed by quoting the conclusions of the Subcommittee, "The economic problems of the profession are greater and more than can be solved by the individual physician today. It therefore becomes the duty of organized medicine to take this burden and aid in its solution for the best interests of all, and to bear the burden of the solution if the individual can not bear it. This must be done through the American Medical Association, the

State Association, and the County Societies, all working in harmony for a common purpose. The actual every day work must be taken in hand and borne by the County Societies and the State Associations, and they must wake up to their duties vastly more than they ever have before for the sake of their own profession. This will require an intelligent reading of at least the reports published by the American Medical Association on the various forms of health insurance and other economic questions. Intelligent action can be based only on intelligent knowledge and until individual physicians will take the trouble to read and inform themselves on this subject they are bound to act through ignorance and prejudice to their own injury. This Committee recommends that the Judicial Council and the Council on Health and Public Instruction continue their point action in studying these economic questions. The committee further recommends that the House of Delegates request each constituent association to appoint committees, to study the subject and to keep their component Societies informed on these questions, that the medical profession be not caught unawares as it was when the Workmens' Compensation Laws were passed, and that these committees investigate local economic conditions and report the results of their studies to the special committee of the American Medical Association. This Committee further recommends that before all legislatures in which proposed laws on social insurance are being considered representatives from the profession shall demand the opportunity to help mold these laws so the public shall not be deprived of the best medical care and so that full justice shall be given to both the public and the profession.—Signed Alexander Lambert, M. L. Harris, F. L. Van Sickle, S. S. Goldwater.

President Lambert in his address to the House of Delegates directed attention in a forceful manner to the unfortunate condition existing in the United States, which involves seriously the interests and even the reputation of the medical profession; that is the complicated situation largely due to our faulty narcotic drug laws. The amount of Opium consumed in the U. S. has increased to such an extent that 500,000 lbs. are imported annually and yet 50,000 lbs. would suffice to furnish all of the legitimate opium necessary for medical use. The situation has become so serious that several states have passed their own narcotic laws, to supplement the Federal law, hoping to control a condition fast becoming intolerable, but unfortunately making it more and more burdensome and annoying for physicians using narcotics legitimately. Some drastic action should be taken against the few depraved, degenerate members of the profession who, joining with the criminal class, are responsible for the continuance of this drug traffic.

Considerable feeling was expressed regarding the increased registration tax under the Harrison Law, but it was felt that the injustice would soon be corrected by federal legislation. The importance of the problem is clearly indicated by the following action of the House of Delegates. The House of Delegates acting on the suggestion of President Lambert authorized the Speaker to appoint a special committee on Narcotic Drugs. The Speaker appointed Drs. E. E. Harris, A. T. McCormack, Paul Waterman and Alexander Lambert. The House of Delegates later passed the following resolution—Resolved, That the Council on Health and Public Instruction in cooperation with the special committee on narcotic drugs be directed to study the entire narcotic drug situation, economic and medical in the U. S. and report to the House of Delegates at the next annual meeting. It was recommended that the American Medical Association request Hon. D. C. Roper, Commissioner of Internal Revenue, to call a Conference of representatives from each State and territory, of the Medical profession, and the wholesale, retail, and manufacturing drug interests and such other citizens as he may consider desirable with a view to controlling the traffic in, and harmful consumption of Narcotic drugs.

Speaker Work in his address to the House of Delegates directed attention to the important question of Hospital Standardization and later the House of Delegates instructed the Trustees to Establish a Council on Hospitals as an independent body, or a Bureau on Hospitals in one of the existing Councils, the details of organization to be left to the Trustees with power to act. The object being to centralize authority and avoid the expensive canvass and tedious propaganda being conducted jointly by the American Medical Association and the American College of Surgeons.

The lack of Postgraduate facilities in this country, made more apparent by the war, led the House of Delegates to instruct the Council on Medical Education to actively interest itself in the subject of postgraduate medical education and to report at the next annual session the results of its investigation.

Toward the close of the last Session of the House of Delegates the following communication was received.—It is with deep interest and gratification that the members of the American Medical Association learn of the project to establish and maintain in the city of London, an American hospital and postgraduate school, the school for physicians of America who desire to take advantage of the wealth of clinical material which London affords, and the hospital in part for American citizens who may become ill while abroad.

The institution is to be built by American residents of London. The projejct which originated with Mr. Franklin, an American surgeon who is attached to the Middlesex Hospital in London, is largely in the hands of Mr. Newton Crane of the American Embassy, and of Mr. Van Duzer, who guarantee that ample funds will be provided for the purpose. The sum of One Million Pounds has been suggested.

Lord Reading has been elected president, and has suggested a lay committee comprising all the prominent men in England. A corresponding list of prominent Americans is being selected. Hon. William H. Taft, Ex-President of the United States, has been approached in reference to his acceptance of the Presidency on this side of the Ocean.

The Medical Contingent of the British committee consists of Sir Humphry Robertson, Sir William Osler, Sir John Bland Sutton and Sir Arbuthnot Lane.

It is proposed that the plan comprise three integral parts:

1. A private home or hospital for Americans abroad.

2. A nonpaying clinical portion of from 100 to 200 beds.

3. The major portion of the building to consist of a home for the American Medical Association. This will comprise lecture room, theater, library, laboratories, and all necessary equipment, and facilities for postgraduate study and research. The clinical and other materials which Great Britain affords for study and research will be at the disposal of American physicians who attend the school.

Among the objects of the plan are the development of friendly competition in research in the field of the medical sciences, and the welding of the two English-speaking nations into one body.

It is learned that it is the desire of the men in England that the American Medical Association should formulate concrete ideas for the development of this project, and that the Association co-operate

with the British Committee in bringing about its Consummation.

Be It Therefore Resolved, That this matter be referred to the Council on Medical Education with instructions to report to the Board of Trustees some plan of effective co-operation of the American Medical Association with the British committee in charge of the American postgraduate medical school and hospital of London.

On motion, duly seconded and carried, the foregoing communication was referred to the Council on Medical Education.

The Judicial Council in its report suggested numerous amendments to the Constitution, all of which were laid over until the next annual meeting. A few slight changes were authorized in the By-laws. The Judicial Council, in closing its report, directed attention to the faithful service of the late Dr. James Edward Moore, a member of the Council from 1911 to the time of his death. The House of Delegates, by request of the Speaker, arose and with bowed heads stood in silence for a few moments in memory of the deceased member.

The election of officers resulted in the selection of Admiral William C. Braisted of the U. S. Navy for President of the Association.

New Orleans was selected as the next meeting place, the date to be announced later.

The Seventieth Annual Session designated the Victory Session was marked throughout by the best of feeling and a fine spirit of co-operation.

—John W. Bell.

THE PRESIDENT: What will you do with the excellent report of Dr. Bell?

DR. J. G. CROSS: I move that the report be accepted and placed on file.

Seconded and carried.

THE PRESIDENT: The next order of business is reports of committees. The first committee to report is the Committee on Public Policy and Legislation, Dr. J. W. Little, Chairman.

Dr. Little presented the following report:

REPORT OF COMMITTEE ON PUBLIC POLICY

The Committee of Public Policy and Legislation met in the office of Dr. Little in February, this year. There were present Drs. Thomas McDavitt, W. A. Jones, Earl R. Hare, J. W. Little, the president, Dr. George Head, being in the United States service and out of the city was not present.

We discussed at some length the advisability of going before the Legislature to combat the chiropractors bill. This year we did not have a medical representative in either branch of the Legislature. Our work in order to be effective would require considerable money and active support from the medical profession. Both conditions were lacking and the Committee were in perfect accord at the stand taken by our very efficient president of the Hennepin County Medical Society, Dr. J. C. Litzenberg, that this year, at least, no medical legislation would be attempted, believing that the public should be as responsible for legislation protecting the health of the public as the doctor, and that we should no longer, as has been the case in the past, be expected or required to assume the whole responsibility.

Hoping this position may meet with the approval of the House of Delegates, I remain, very respectfully, J. Warren Little, Chairman of Committee of Public Policy and Legislation.

At the conclusion of the report, with the permission of the House of Delegates, I would like the secretary to read a very able letter from Dr. Litzenberg.

The secretary read the following communication:

Minneapolis, Minn.
April 7, 1919.

Hon. James Handlan, Chairman,
69 Winnipeg Street.
St. Paul, Minn.

Dear Sir:

I beg leave to acknowledge receipt of yours of recent date in regard to the bill relating to compulsory physical examinations by health authorities.

The time is too short to call the Hennepin County Medical Society together for a formal expression, so the views here expressed are my personal opinons, but from interviews with many physicians I believe I voice the view of a large percentage of the profession.

I note that you say that "The advocates of the bill have been pushing it aggressively, but the medical profession was not represented at the hearing in either House." Why?

In your request for our opinion you say, "This is a bill in which the medical profession should be interested, and I would like to know the views of the doctors upon it." There may be others who have been surprised that the physicians have done no lobbying against this measure. Please permit me to explain that the medical profession is taking a new attitude toward all health legislation, namely, that the public health is the concern of the whole people and not of any single profession or class. We take the position that as medical men we will not lobby or use political methods to further any public health bill, believing that the responsibility for the health of the people rests directly upon the shoulders of the people themselves through your honorable body and not upon the medical profession except in in the capacity of advisors and then only when desired by you. It has for years been customary for physicians to use their utmost efforts to advance the cause of public health legislation, even though it is perfectly manifest that fewer physicians are needed as the public health is improved. Therefore, it is evident that efforts of the medical profession were only for the good of the public health.

In spite of this, ulterior motives were attributed to us. However, we care very little about the misinterpretation of our motives, but a really serious situation has arisen on account of the belief that such bills were in the interests of the medical profession alone and that, insofar as they affected the public health, the medical profession would protect the interests of the people. The public itself has taken practically no interest or responsibility in the matter of its own health while the medical profession has received only criticism in its efforts to protect the public.

Therefore, we have determined to place the responsibility where it belongs, upon the shoulders of the public whose health is at stake. We will take no part in lobbying or solicitation of individual legislators, but we will place ourselves at your service when desired; if not desired, your responsibility is to the people not to us.

But inasmuch as you have by letter asked our opinion of the measure before you, we feel in duty bound to answer your query.

The passage of this bill will increase the income of physicians, but will be a grave menace to the health of the public; your children and the families of your constituents will be exposed to contagion by the exemption of certain individuals from the authority of the health officials. Epidemics may be expected. One individual, exempted from control, may give a contagious disease to hundreds; one diphtheria or typhoid carrier has been known to distribute these diseases to whole communities. This bill is not in the interest of the great public good,

but for the benefit of a few individuals. Sometimes the desire or even the rights of individuals must be subordinated to the public welfare.

The responsibility is yours, gentlemen. The medical profession has performed its full duty in pointing out the danger to the public health. Whatever action your honorable body takes will be with the full knowledge of the consequences. The responsibility for protecting the public from disease and bettering health conditions belongs to the people, through you. The true function of the medical profession is to advise the people and to show them how to protect themselves. The doctor's mission is to be a teacher and not a political manipulator or lobbyist. The principles here expressed are fundamental, and the sooner they are recognized the better it will be for the health of the people.

Very respectfully yours,
J. C. LITZENBERG.
Pres. Hennepin County Medical Society.

After the reading of Dr. Litzenberg's letter, Dr. Little said: The recommendation you made, Mr. President, to the incoming president, is in complete accord with the position we have taken in this matter. I understand you recommended that certain men be nominated to whom legislators could refer, and that is the position we take. It would be a good thing to have that kind of committee appointed, some committee to whom they could go for advice.

THE PRESIDENT: The report of this committee is before you. Are there any remarks?

It was moved and seconded that the report be adopted, including the letter of Dr. Litzenberg. Carried.

THE PRESIDENT: The next is the report of the Committee on Social Insurance.

The secretary read the following letter from Dr. J. W. Andrews, Chairman of this Committee:

September 27, 1919.

Dr. Earle R. Hare, Sec.,
Minnesota State Medical Association,
730 LaSalle Bldg., Minneapolis, Minn.

Dear Doctor:

I have your letter informing me that you will expect a report from my Committee on Social Insurance at the House of Delegates, Wednesday, October 1, 1919.

I have tried very hard to keep in touch with Social Insurance the last few years. The facts are there have been no material changes since the last report of the Committee. The reason for this is the war conditions of the nation, the results of which are still being felt. I think very likely that the Committee might be able to make a report next year, 1920. The president may continue the same committee if he so desires or appoint a new one. If I am reappointed chairman of such a committee, I wish I might know about it a few months before the Association meets, so that I might be gathering information relative to a report.

I expect to attend the State Medical Society next week.

Fraternally yours,
J. W. ANDREWS.

THE PRESIDENT: This report is before you for action.

DR. R. J. HILL: I move that the report be accepted, and that the committee be continued.

Seconded and carried.

THE PRESIDENT: Does that make it encumbent upon the new president to appoint that committee?

DR. HILL: It would amount to the same thing.

THE PRESIDENT: Report of the Editing and Publishing Committee, Dr. R. E. Farr, Chairman.

Dr. Farr presented the following report:

REPORT OF THE EDITING AND PUBLISHING COMMITTEE.

To the House of Delegates of the Minnesota State Medical Association—

Gentlemen:

I beg to present the report of the Editing and Publishing Committee of the State Journal, Minnesota Medicine, for the year ending September 30th, 1919.

The Financial Report presented by the Business Manager, Mr. J. R. Bruce, is as follows:

For the thirteen (13 issues from September 1, 1918 to October 1, 1919, inclusive:

Receipts on Advertising and Miscellaneous Subscription Accounts and Forwarded to the Treasurer of the Association	$5,770.80
Received to the Credit of the Editing and Publishing Committee ($1.00 for each member on membership roll, Dec. 31, 1918.)	1,442.00
Accounts Receivable	1,192.68
	$8,405.48
Disbursements, Including Expenses of $450 Incurred in Connection with the Issue of the October, 1919, Number	6,606.39
SURPLUS	$1,799.09

I wish to call your attention to the fact that the advertising receipts for ten (10) months of 1919 have averaged approximately $100.00 per issue larger than for the corresponding period of last year. The advertising receipts may be reasonably expected to increase as MINNESOTA MEDICINE becomes more widely known.

Your Committee may be interested in knowing that since the first issue of MINNESOTA MEDICINE, which appeared in January, 1918, there has been remitted to the treasurer of the Association a total of $8,046.69

to which should be added subscription credits of Dec. 31, 1918, amounting to 1,442.00

And advertising accounts receivable 1,192.68

$10,681.37

Disbursements have amounted to 10,106.35

Leaving a balance to the credit of the Committee $ 557.02

You will note that no credit is taken for subscription credits for the first ten (10) months of 1918, which would amount to approximately $1,250.

The Treasurer's Report of this year shows a difference from my report of approximately $700 from January 1, 1919 to the present date, in the amount of actual receipts and disbursements, but in the Treasurer's Report, MINNESOTA MEDICINE is not credited with practically $1,200 in bills receivable for advertising and approximately $1,300 due on subscriptions for the first ten (10) months of 1919.

The estimated surplus on December 31, 1919 is $2,500.

Respectfully submitted,
R. E. FARR,
Chairman Editing and Publishing Committee.

THE PRESIDENT: What disposition do you wish to make of this report?

DR. W. L. BEEBE: I move that the report be accepted and placed on file.

Seconded and carried.

THE PRESIDENT: The next report is that of the Committee on Hospitals.

The secretary read the following report:

REPORT OF COMMITTEE ON HOSPITALS.

Sept. 29, 1919.

To the House of Delegates,

Minn. State Medical Assn.

The Advisory Committee on Medical Hospital Education makes the following report:

In July the chairman of this committee received notice that the following members were appointed on the committee: Dr. John Rogers, of St. Paul; Dr. Robert Earl, of St. Paul; Dr. A. W. Abbott, chairman. As announced in the program, this committee consists of Dr. E. T. F. Richards, St. Paul; Dr. L. A. Nippert, Minneapolis, Dr. A. W. Abbott, chairman. The chairman of this committee has received no instructions as to powers, duties, dates or place of meeting. There has been no request for advice from the Council on Medical Education in reference to hospitals.

For the above reason the committee has not been called together and no action has been taken.

Respectfully submitted,

A. W. Abbott, Chairman.

THE PRESIDENT: There seems to have been some confusion with relation to the duties of this committee and instructions which should have been given to it. As I understand, the secretary of the Association has received no instructions from the American Medical Association with relation to the duties of this committee. It has evidently been overlooked and should be remedied.

What will you do with the report?

DR. R. J. HILL: I move that it be accepted and placed on file.

Seconded and carried.

THE PRESIDENT: Report of the delegate to assist in the collection and publication of the papers of the late Dr. H. A. Tomlinson. The delegate (Dr. F. P. Strathern, St. Peter) is not present and has not sent in a report.

Dr. A. E. Spalding, Luverne, presented the report of the Committee on Necrology, as follows:

REPORT OF THE COMMITTEE ON NECROLOGY.

A. E. Spalding, Committee.

Dr. Clarence W. Andersen.

Dr. Clarence W. Andersen, of the staff of the Mayo Clinic died in December 1918, at the age of 33, of pneumonia. Dr. Anderson was a graduate of Louisville Medical School.

Dr. William A. Hall.

Dr. William A. Hall died at the age of 67 years at his home in Minneapolis on April 12. Dr. Hall was born in New York state and graduated from the Albany Medical College. He came to Minnesota 35 years ago and has been practicing in Minneapolis for the last 30 years. He served terms as president of the Hennepin County Medical Society and The Minnesoto State Medical Association. Besides his window he is survived by a son and a daughter.

Dr. Howard Kerns.

Dr. Howard Kerns of Granite Falls, died at his home on October 17th, 1918. He is survived by his wife and one son, David Marlowe Kerns. Dr. Kerns received his medical education at Johns Hopkins University.

Dr. Emil King.

Emil King, Fulda, Minnesota, was born in 1867, graduated at the University of Pennsylvania in 1893. Was secretary of the Southwestern Minnesota Medical Society for several years and to his untiring efforts made this society a success. He was a man esteemed by everyone who knew him and Southwestern Minnesota lost a most worthy and honored physician. To Dr. F. J. McAllister of Hawarden, Iowa, I owe the following report of his untimely death:

"First Lieutenant Emil King, Fulda, Minn., a member of the 303 Sanitary Train, and at the time of his death, in charge of a field hospital company was accidentally killed by a motor lorrie on the night of Sept. 11th in the great St. Mihiel drive.

"Lieutenant King had been at the front with his Field Hospital Unit, when on account of the severe shelling, they were compelled to move farther to the rear. The movements were all necessarily under cover of darkness. It was an exceptionally black night and raining. He was cautioning his men to keep on their side of the road, in order that they might be safe from motor transportation. Standing in front of them, looking to their welfare and performing his duty with the highest efficiency, he was struck by a lorrie, causing internal injuries, which produced death in a few hours.

"It was my pleasure to know Lieutenant King very intimately for a year before going to France. It was doubtful at one time, on account of his age, if he would be allowed to go. He came to me with tears in his eyes and begged me to intercede in his behalf to the Division Surgeon, that he might be allowed to accompany his organization overseas.

"Lieutenant King was one of the first few medical officers who were called into training at Fort Riley, Kan. After spending three months in this intensive training camp, he was assigned to the 26th Engineers at Camp Dix, N. J. 78th Div. N. Army. His ability was soon recognized and he was transferred to the sanitary train, and given command of a company. He was a tireless worker and instilled his energy and patriotism into the men, who were afterwards to witness his death. He was born in Austria and came with his parents to this country when eleven years of age. Although born in the land of the men he was fighting, no greater patriot ever answered his country's call.

"Having been given a fairly good description of his burial place being well acquainted with the terrain of that sector, a search was made for the grave. The hunt was successful, having located it near Fey en Hey, which is in the Toul Sector almost at the extreme south end.

"It is also very near Mamey at which place his Division was stationed at the time of his death. It is also less than fifteen miles from that famous city of Metz."

Thus runs the story of another noble medical officer who paid the supreme sacrifice, that the "world might be safe for Democracy."

Dr. James Edward Moore.

James Edward Moore, Minneapolis; one of the most notable surgeons of the Northwest; died at his home in Minneapolis, November 2, 1918, from pernicious anemia. He was born in Clarksville, Pa., March 2, 1852, pursued his medical studies at Bellevue Hospital Medical College, New York City, from which he was graduated in 1873. After three years of practice in Fort Wayne, Ind., six years in Emlenton, Pa., and three years of postgraduate study abroad, he located in Minneapolis in 1882. He specialized in surgery since 1888. He had been surgeon in chief of the Northwestern Hospital, Minneapolis, since 1907; and connected with the University of Minnesota since its organization in 1888; had been professor of surgery in its medical department since 1904, and chief of that department since 1908. He was made chairman of the Section of Surgery, General and Abdominal, of the American Medical Association in 1902, and had been a member of the Judicial Council of the Association since 1911. He was president of the Western Surgical Association in 1902, and was an honorary member of the American Orthopedic Association. He was an extensive contributor to the literature of his specialty, and was

the author of Moore's Orthopedic Surgery, which was published in 1898. In the death of Dr. Moore the State Association has lost one of its most noted and ardent workers.

(From Journal of the American Medical Association, June 14, 1919.)

Minutes of House of Delegates, American Medical Association, Atlantic City Session, June 9, 1919.

Tribute to Dr. James Edward Moore and Our Soldier and Sailor Dead.

At the conclusion of the report of the Judicial Council, the Speaker said: Perhaps every member of this House remembers Dr. James Edward Moore with respect. The majority of us remember him with affection. I will ask the members of the House to stand for a moment in respectful silence in memory of this great man and our soldier and sailor dead. Whether they rest in home-made graves or under rude crosses overseas, the poppies of memory will wave over them forever.

The members of the House then arose and stood in silence for a few moments, as requested by the Speaker.

Resuming, the Speaker said: When this House adjourns it will do so in memory of our departed soldier and sailor dead and Dr. Moore.

REPORT OF THE JUDICIAL COUNCIL

(Meeting of the American Medical Association, June 9, 1919.)

Dr. James Edward Moore

The Council feels this report would not be complete if it did not convey to the House of Delegates the minutes which the Council has spread on its records commemorating the life and service of Dr. James Edward Moore who has served faithfully on the Judicial Council since 1911. The following true copy from the minutes of the Judicial Council is appended:

The Judicial Council with deep regret announces the death of one of its members, Dr. James Edward Moore of Minneapolis, Minn. Dr. Moore was born in Clarksville, Pennsylvania, March 2, 1852. After an illness of six months, he died at Minneapoils, Minn., November 2, 1918. He was the son of Reverend George W. and Margaret (Ziegler) Moore. His preliminary education was obtained in the public schools of Pennsylvania, at the Poland Union Seminary at Poland, Ohio, and the University of Michigan. He took his degree in medicine at the Bellevue Hospital Medical College, New York City, graduating in the class of 1873. After spending two years in the hospitals in New York City, he located in Emlenton, Pa., where he engaged in general practice for a period of six years. In August of 1882 he moved to Minneapolis. Then, in 1885, he went abroad to study, spending about two years in the hospitals and medical schools on the continent and in England. On his return to Minneapolis in 1887, he devoted his entire time to surgery, and was one of the first practitioners west of New York to strictly limit his practice to a specialty.

When the Medical School of the University of Minnesota was established in 1888, Dr. Moore was associated with the movement. He was appointed chief of the Department of Surgery in 1908. He retired from active practice in 1915 to devote himself entirely to teaching and the work of the surgical clinic in the University Hospital.

He was a member of the American Surgical Association, vice-president in 1905; of the Western Surgical Association, president in 1903; of the Southern Surgical Association, and a Fellow of the American College of Surgeons, a member of the Board of Governors. He was also a member of the Societe Internationale de Chirurgie. He was a member and a Fellow of the American Medical Association, chairman of the Section on Surgery, General and Abdominal, in 1903, and a member and vice-chairman of the Judicial Council since 1911. His services on the Judicial Council of the American Medical Association proved Dr. Moore to be a man of strong personality. His confreres in the profession revere his memory because of the quiet but none the less firm influence which he exercised in the development of professional character and ability, especially in younger practitioners, not only as head of the department in Surgery at the University of Minnesota, but also in other relationships. Dr. Moore was a man of rugged honesty, innate kindliness, and noble unselfishness.

Respectfully submitted,

M. L. Harris, Chairman.
H. A. Black,
Randolph Winslow,
William S. Thayer,
A. R. Craig, Secretary. . .

Dr. Charles J. Meade.

Dr. Charles J. Meade, well known St. Paul physician, died suddenly at his home, 917 Goodrich Ave., on August 22nd, of heart disease. Dr. Meade was born in Morrisbury, Ont., forty-eight years ago. He graduated from McGill University, Montreal, in 1892 taking postgraduate courses in the East and coming to Minnesota in 1895. He was associated with Drs. Carrol, Fogarty and Dunn and was on the staff of St. Joseph's Hospital and other St. Paul Catholic institutions for a number of years.

Dr. C. F. Morell.

Dr. C. F. Morell of Brainerd, died on November 14, 1918, after several days of illness of pneumonia following an attack of influenza. Dr. Morell was born in Verndale, Minn., August 26, 1887. He attended the University of Minnesota and after graduation served as interne for one year and a half at the City Hospital, Minneapolis. He practiced in Verndale for two years, and on July 1, 1918, became associated with Dr. Thabes of Brainerd.

Dr. Hugh F. McGaughey.

Dr. Hugh F. McGaughey of Winona, Minn., died very suddenly in Tacoma, Washington, on June 20, 1919. He was born in Winona on July 25, 1893, and received his college education at the University of Michigan and his medical training at the College of Physicians and Surgeons in New York. He has held the office of President of the Southern Minnesota Medical Society and represented the Eighth district of the State Association.

Dr. C. M. Oberg.

Dr. C. M. Oberg, Minneapolis, died on January 30th of pneumonia after an illness of about ten days. Dr. Oberg was a graduate of the University of Minnesota, class of 1910. He is survived by his widow, two daughters, his parents, and six brothers.

Dr. George E. Peterson.

Dr. George E. Peterson of Dassel, Minn., passed away at his home on January 5th, following an attack of pneumonia from which he had suffered about ten days. Dr. Peterson was born in Wright County, March 6th, 1878. After graduation he practiced in North Dakota and at Murdock, Minn. He is survived by his widow, one sister and four brothers.

Dr. Cornelius Williams.

Dr. Cornelius Williams, of St. Paul, died on December 30, at the age of 70. Dr. Williams graduated from Columbia, Class of '74, and came to Minnesota in '83, residing in St. Paul over thirty-five years. Dr. Williams was a specialist in eye and ear diseases, and was a man highly respected for his professional abilities and his personal character.

Dr. J. M. O. Tufty.

Dr. J. M. O. Tufty for the last thirty years a prom-

inent physician of Duluth, died suddenly of heart failure on February 4th. Dr. Tufty was born in Norway, April 27, 1857, and was educated at the University of Christiana, coming to Duluth in 1886 and following his profession up to the time of his death. He is survived by his widow and daughter and two sons.

Dr. Arthur M. Wooster.

Dr. Arthur M. Wooster, of Rockford, died in December 1918 at the age of 31. Dr. Wooster was a graduate of the Medical School of the University of Minnesota, Class of 1911.

Dr. Otto L. Winter.

Dr. Otto L. Winter passed away at his home in River Falls, Wis., on January 2nd, 1919, of pneumonia following influenza.

Dr. Gustav A. Renz.

The death of Dr. Gustav A. Renz took place on April 13th, 1919. Dr. Renz was born near Chaska, Minnesota, on the 8th day of June, 1860, later moving with his parents to St. Paul, where he spent his boyhood and lived until his death. His early education was received in the common schools, later graduating from the Central High School of St. Paul. After this he entered the Medical Department of the University of Pennsylvania, from which he graduated in 1884. Returning to St. Paul he at once engaged in the practice of medicine.

After a couple of years in practice, being aware of the marvelous advances which were being made in medicine through the introduction of laboratory methods, he determined to avail himself of the advantages of a postgraduate course of study in Europe. While abroad he pursued his studies in France, Germany and Austria availing himself of the opportunities to be had in the large medical centers of Paris, Berlin and Vienna, where he received instruction from the most celebrated teachers of the time, and whose unlimited clinical facilities were at his disposal.

Much fascinated by the rapid strides being made in pathology after the introduction of bacteriology, he devoted much of his time to the study of laboratory methods. After a couple of years spent in study abroad he returned to St. Paul and engaged in the practice of his profession.

He was an active member of the Visiting Staff of the City and County Hospital from its formation until the time of his death, having served first as Pathologist and later as one of the visiting Gynecologists. For a number of years he was Professor of Clinical Gynecology of Hamline University. He was for several years Director of the Laboratory of the Ramsey County Medical Society, and it was under his direction and supervision that the enterprise of preparation and sterilization of catgut was carried out.

He was a member of the Ramsey County Medical Society of which he was an ex-president, the Minnesota Academy of Medicine, the Minnesota State Medical Association and the American Medical Association.

While not a frequent contributor to medical literature he kept close touch with recent advances in medical science.

In 1899 he was appointed Assistant Health Commissioner in which capacity he served continually for eight years. Following this he was appointed and served a term of four year as Health Commissioner. After an interval of three years with the adoption of the present city charter, he was appointed Chief Deputy Health Officer in which capacity he continued to serve until the time of his death.

Dr. Renz was held in high esteem by his patients, colleagues and associates. Death came peacefully on the evening of April 13th after a lingering illness of several months, during which he bore his suffering with singular resignation and fortitude, often refusing the temporary relief which drugs alone would give.

Dr. Renz is survived by his widow and two brothers, Otto Renz, Vice-President of the Art Engraving Company and Frank Renz, also of St. Paul.

Dr. Harry C. McIntosh.

Dr. Harry C. McIntosh, St. Paul, died at Camp Sherman, Ohio, on October 6th, of Spanish influenza. Dr. McIntosh was thirty-one years of age, a graduate of the College of St. Thomas, and of the Chicago College of Medicine and Surgery, and had practiced in St. Paul about five years. He entered the service in July as lieutenant in the medical reserve corps.

Dr. Edwin S. Muir.

Dr. Edwin S. Muir of Winona died at his home on July 14th at the age of 48 years. He opened an office in Plainview in 1894 where he practiced for four years, going to Winona in 1898 and has continued his practice there since that time. Dr. Muir had twice been mayor of Winona.

Henry Albert Schmidt.

Henry Albert Schmidt, born in Rosehill township, Cottonwood Co., Minnnesota. Was a graduate of Windom high school in 1904, graduated from the University of Minnesota in 1911, was interne at Asbury Hospital, Minneapolis, for 1 year. Practiced in Westbrook, Minn. until his death on Oct. 21, 1918, at the age of 36.

George R. Curran.

Dr. George R. Curran died at Mankato Sept. 1st, 1919. He was born at Cannon Falls, Minn. July 1st, 1863. He received his education at the Hastings high school and Carleton College, Northfield, from which institution he graduated in 1887. His medical education was received at the University of Michigan from which he graduated in 1892.

He at once entered upon the practice of medicine at Worthington Minn. where he remained nine years. The following year he spent in Europe for postgraduate study. Upon his return, he located at Mankato, where he pursued the practice of surgery. He was a member of the Blue Earth Co., the Southern and Southwestern Societies. He was a close student and contributed many valuable papers to the medical societies of which he was a member. His death was due to a heart lesion from which he suffered for the past two years. He left a wife and one daughter to mourn his loss.

THE PRESIDENT: What will you do with this report?

It was moved that it be adopted and placed on file.

Seconded and carried unanimously by rising vote.

DR. LITZENBURG: I move that these transactions and appropriate resolutions be drafted, spread upon the minutes, and that copies of the same be sent to the families of each of the deceased members.

Seconded and carried.

THE PRESIDENT: Report of the member of the National Legislative Council, Dr. W. L. Beebe, of St. Cloud.

Dr. Beebe presented the following report:

To the House of Delegates of the Minnesota State Medical Association:—

With one hundred and fifty delegates present at the Fifteenth Annual Conference of the Council on Medical Education and Licensure of the American Medical Association, we had one of the most interesting and successful meetings that I have attended as your representative.

A joint session with the Federation of State Medical Boards added to the interest and efficient work of both meetings. The many representative men of the U. S. Army and Navy sprinkled throughout the audience, gave it an imposing appearance and made

the discussions more impressive. Such a paper as the one by Brigadier-General Edward L. Munson of the United States Army, read by Brigadier-General F. A. Winter of the same corps, subject, "The Needs of Medical Education as Revealed by the War," and discussed by N. A. Arnold, Lieut.-Col. in Medical Corps, U. S. Army, Col. Bispham, Fort Sheridan, Capt. Frederick C. Waite, Captain Sanitary Corps, U. S. Army, Major W. C. Rucker, Asst. Surgeon-General, and the old War Horse, Major Victor C. Vaugn, Dean of the Ann Arbor Medical School, who always talks good sense in a most interesting manner whenever he says anything.

As you all know, Hospital Standardization has taken a prominent part in all medical organizations within the last few years. The medical, and more especially the surgical men of America, through the Fellows of the American College of Surgeons, have impressed the majority of the American Hospitals with the fact that there should be a standardization. The time is not far in the future when hospitals will be compelled to bar out of their operating rooms men who call themselves surgeons, and are not possessed of the requisite amount of knowledge to know when not to operate,—men who have neither the knowledge of anatomy, nor the skill to perform the simplest operations, men who are daily performing operations which never needed performing at all, even by a competent surgeon, and all this malpractice for the sole purpose of stealing the victim's money. Ere many years pass by, all this criminal work will be stopped by law, and the "licensed practitioner" will be forced to refer his surgical cases to competent surgeons, without even a fifty-fifty interest in the surgeon's fee. In a little town of my acquaintance, there are fourteen men licensed by the State of Minnesota to practice medicine. Twelve of the fourteen are posing as surgeons and attempting major operations. Only three are competent to do these operations, and I hope to see the day when the incompetent are prevented from attempting surgery, and when they are brought before the courts for criminal practice,—that it will no longer be good form, or unethical, for every other licensed physician not to swear, "No, he was not guilty of malpractice." Then let the insurance companies pay the poor, unfortunate victims a little compensation for the time and suffering caused by these unscrupulous, ignorant or misguided individuals who take the people's money for malpractice.

With the united efforts of the American Medical Association, through its Council of Medical Education, the Catholic Hospital Association, the American College of Surgeons, the State Licensing Boards, and other interested organizations, all combining their efforts in this one direction of betterment of Hospital Standardization, the outlook is, at present, very much better than ever before.

In a joint session with the Federation of State Medical Boards, one of the best papers was on Hospital Standardization, by Dr. A. R. Warner, of Cleveland, President of American Hospital Association. This paper was the most generally discussed of any in any of the meetings. The first man to discuss it was Dr. Arthur Dean Bevan, President of the American Medical Association, and father of the Council on Medical Education. He said: "As to the standardization of hospitals, the plant in which medical students are trained, and in which medical men do their work, should be thoroughly standardized. I believe the time is not far distant when the State Government will realize that duty and standardize hospitals, and see that the work in them is properly and safely done. The factors that are essential to success are the Hospitals themselves, The American Medical Association, the State Licensing Boards, the medical profession, and the medical colleges."

Dr. E. P. Lyon, Dean of our Minnesota University, discussed the paper, "From the Standpoint of the Medical Schools," I will not take your time to quote you what he said about the Interne Year, and about Minnesota's attempt to enforce the interne year as a requirement for the degree of M. D. It is well worth the while for those who have not read it, to do so.

"From the Standpoint of the State Licensing Boards," Mr. Frances W. Shepardson, Director of the Department of Registration and Education, Springfield, Ill., gave some very valuable suggestions.

Dr. Chas. P. Emerson, Indianapolis, Indiana, presented the point of view of a clinical teacher, and also of a Hospital Superintendent. Dr. W. I. Means, Columbus, Ohio, spoke concerning the agencies that are best equipped to push the internship year as a requirement for graduation, and the standardization of hospitals.

Dr. Jno. M. Dodson, Dean of the Rush Medical College, said, "I believe this standardization can be brought about by publicity, and by such moral influence as the Council on Medical Education and the Medical Schools themselves have exercised on each other."

Dr. J. Henry Carstens, Detroit, Mich., said:

"We have heard a good deal about Hospital Standardization, and what ought to be done, but I want to know, who is going to do it? The state licensing boards cannot do it because they are largely political boards. The Hospital Superintendents would like to do it, but they have not sufficient influence with the members of the board of trustees, who do not understand the situation. I believe the great American Medical Association should be the leader in the Standardization of Hospitals."

In closing the discussion, Dr. Warner offered the following resolution:

"Resolved, That it is the concensus of opinion of the members of this Conference, that the apparent agreement on the subject of hospital standardization, as expressed in this meeting, should be utilized to expedite progress on this problem. To that end it is the concensus of opinion of this Conference that the American Medical Association be asked to take the leadership in formulating a committee representing all interested factors, which shall give this subject of Hospital Standardization such consideration and study as is possible, and that the American Medical Association, together with this committee, arrange to call a meeting of those interested in, and affected by, hospital standardization, at some convenient point and time within the next year."

Dr. Bevan, in seconding the resolution, said:

"I should like to present this as a practical working solution: That the American Hospital Association. The Federation of State Boards, The Association of American Colleges, and the American College of Surgeons, each appoint a delegate to act with the American Medical Association in forming a joint committee."

The resolution was carried unanimously.

So, as I said earlier in this report, this whole subject presents a more hopeful appearance than at any time during the last few years that it has been so eloquently and vigorously presented. It begins to look as if something might be done, and that at a not far distant time. God speed it.

THE PRESIDENT: Unless there is objection the chair will consider this excellent report of Dr. Beebe accepted and placed on file.

The secretary read the following resolutions on the death of Dr. Frank Todd:

IN MEMORIAM

To The Memory of Doctor Frank Chisholm Todd,

Lieutenant Colonel M. C., U. S. A., the members of The Minnesota State Medical Association offer the tribute of their respect and appreciation.

It has been given to few men, as to him, to recognize so clearly and to meet so amply, the opportunities of service in their day and generation.

In the sacred circle of his home, in the social service of this community, in the specialized practice of his profession, in the teaching of his art and science, in establishing the standards of medical education in his State and Nation, in promoting the welfare of his University, in the military service of his country, he saw with keen eyes the pathway of duty and he "went straight forward" to his goal with full devotion, without fear, without failure and without reproach.

His comrades, associates and friends would fain believe that in some other sphere he is still going straight forward in some higher service and to some greater goal.

To his family the Association extends its sympathy, and also gives them joy that with their grief, may be mingled pride that he gave his life to so great a cause and answered his last call in so noble a spirit.

Recorded in the Annals of the Society October First 1919.

GEO. DOUGLAS HEAD, President.
EARL R. HARE, Secretary.

THE PRESIDENT: The chair will ask the members of the House of Delegates to rise and bow their heads for a moment to acknowledge this tribute to Dr. Todd.

The delegates did as requested.

THE SECRETARY: I have in my hand a request from the Jackson County Medical Society, as follows:

May 13, 1919.

Minnesota State Medical Society,
Office of Secretary.
Gentlemen:—

We, the undersigned, members of the Jackson County Medical Society, have decided to surrender our Charter as a component part of the State Medical Society. It is our desire to transfer and become members of the Southwestern or some contiguous society. This action was taken owing to our small membership, which makes impossible the holding of successful meetings. We respectfully request that this be brought before the House of Delegates at their next meeting.

Signed: By nine members.

THE SECRETARY: In presenting this request, I will state it has been acted upon by the Councilors, and they have accepted the request and voted that it be granted.

THE PRESIDENT: What do you wish to do with this request?

DR. BEEBE: I move that the action of the Councilors be confirmed with relation to this request.

Seconded and carried.

The secretary read the following resolution offered by Dr. Christison:

RESOLVED, That the voluntary preventive public health work of the 82 counties Public Health Association of this state, in co-operation with the American Red Cross Northwestern Pediatric Society, the State Dental Society, the State Board of Control, the Pediatric Department of the University, of Minnesota, the Advisory Commission on Tuberculosis, the State Board of Health, the State Department of Education, the Federation of Women's Clubs and other interested bodies, centered in the activities of the Minnesota Public Health Association, is worthy of our sincerest indorsement. We approve the method of voluntary financing of these preventive measures through the sale of Red Cross Christmas Seals, December 1st to 10th, 1919, and believe that everyone interested in the great modern voluntary public health movement should do the best that is in them to aid in the adequate support of this superlatively important work in education, demonstration and legislation.

Dr. G. S. Wattam moved that action on this resolution be postponed until a subsequent meeting of the House of Delegates so that the House can get an explanation from Dr. Hill.

Motioned seconded.

DR. CHRISTISON: I can offer, at least, a partial explanation. This resolution is simply asking for indorsement. Those who are familiar with the situation will remember that last year there was no sale of Red Cross seals at Christmas time; that the American Red Cross Society handled the whole matter and turned it over to the component society, which in Minnesota is represented by the Minnesota Public Health Association, the quota representing the amount of money that they collected for 1917. Now, they come back again to the original proposition of the sale of Red Cross seals, and if I may put it in this way, the Minnesota Public Health Association is made the representative of the American Red Cross Society for the State of Minnesota. I can answer especially for the pediatric society and the pediatric department at the University of Minnesota. When we were at a loss for funds to carry on the work under the State Board of Health with reference to giving clinics in the state where they asked for them, Dr. Hill came forward with several thousand dollars and told us that if we would continue to give these clinics this money was available for that particular purpose, and if the Northwestern Pediatric Society, which is made up of the Pediatric Department of the University, would undertake to carry on this work, he would supply us with the money, and that money must be expended by this department between the time he offered it to us and the 1st of next January. So far as I know, I can only speak for the Association of which I happen to be chairman at the present time. Our arrangement with Dr. Hill is the same as it was in former years. They were to receive eighty per cent of the gross sales and finance their own program. The resolution is asking the state society to endorse the sale of Red Cross seals, and the method of expenditures as involved by the activities of the Minnesota Public Health Association. I believe, although I do not know absolutely, that the method of expenditure is clearly defined, and there is only one way in which it can be done.

The motion of Dr. Wattam was put and carried.

Under the head of "new business," Dr. Cross moved that the fiscal year of this Association end with December 31st of each year. Seconded.

Dr. Litzenberg moved to amend that the fiscal year end June 30th. Amendment seconded.

The House took a vote on the amendment and it was declared lost.

The original motion of Dr. Cross was then put and carried.

THE PRESIDENT: Is there any further new business to come before the House of Delegates?

DR. D. N. JONES: At a recent meeting of the Camp Release Medical Society I was requested to introduce a resolution, if it has not already been done, instructing our Legislative Committee to see what can be done with the next session of the Legislature towards having the malpractice law time limit reduced from six years to two years. That is the point I wish to make.

THE SECRETARY: The Legislative Committee, at its meeting in February, requested that the secre-

tary have introduced a bill in the Legislature covering the point which has just been raised, and in compliance with that request, the secretary visited the office of the Attorney General and had drafted a bill reducing the time of action from six years to two. This bill was introduced by a representative at my request and was immediately passed over to a committee composed of lawyers, and it was killed without ceremony in the Committee and never reported out. I was much surprised at the attitude of the lawyers in this particular, but the representative who introduced it, being a personal friend of mine and a lawyer, said it was nothing more than could be expected when it was referred to a committee made up of lawyers.

I believe at the next session of the Legislature this bill should be redrafted and should be introduced on the first day of the session, and then there will be opportunity to get it out of committee with, at least, more ceremony than it received the last time.

DR. D. N. JONES: I move that the Legislative Committee continue their efforts in the Legislature towards having this matter brought up at the next session, and that our secretary be authorized to reintroduce this bill, which was formerly presented to the Legislature, reducing the time limit for malpractice cases from six to two years.

Motion seconded and carried.

DR. J. H. JAMES: I wish to offer the following: That the Blue Earth County Medical Society by unanimous vote instructed their delegate to protest against the two dollar assessment for the defense fund.

THE PRESIDENT: Do you wish to take any action on this? If not, it will be simply placed upon the minutes.

DR. R. J. HILL: I move that the resolution offered by Dr. James be placed on the table for discussion on Friday morning in order to give us time to think it over in the meantime.

Seconded by Dr. Beebe and carried.

On motion, which was duly seconded and carried, the House of Delegates then adjourned until Friday, 10:00 A. M.

SECOND SESSION—FRIDAY MORNING
OCTOBER 3, 1919.

The House of Delegates was called to order by the President, Dr. George Douglas Head, at 10:10 A. M., in the Empire Room, Radisson Hotel, Minneapolis.

THE PRESIDENT: I think we have a quorum present, and if the House of Delegates will please come to order, we will hear the reading of the minutes by the secretary of the former meeting.

The Secretary then read the minutes of the previous meeting.

THE PRESIDENT: Gentlemen, you have heard the minutes of the former meeting. Are there any corrections? If I hear no objection they will stand as read and are approved. We will now have the supplementary report of the Committee on Credentials, Dr. J. G. Cross.

DR. J. G. CROSS: Mr. President, the Owatonna Society certified Dr. W. J. McCarthy, and on the back of this an appointment of Dr. W. H. Rowe as alternate, but unsigned. I think it is proper if Dr. McCarthy is not here and if Dr. Rowe is here—

A DELEGATE: Dr. McCarthy is here.

DR. CROSS: Then we will add Dr. McCarthy's name to that list, and Dr. F. A. Savage. The committee is also in doubt whether Dr. Frank Naegeli is here.

A DELEGATE: Dr. C. O. Estrum, of Fergus Falls, is his alternate.

DR. CROSS: Dr. E. W. Buckley was seated the other day by the Committee, and here is a letter authorizing Dr. H. L. Taylor to act as his alternate, and the Committee does not know whether Dr. Buckley is present or not.

THE SECRETARY: Dr. Buckley is not present.

DR. CROSS: Then we will certify Dr. Taylor in his place. The same applies to Dr. Drake as alternate for Dr. L. E. Dougherty.

THE PRESIDENT: Is Dr. Drake here?

DR. C. B. DRAKE: Yes, sir.

DR. CROSS: The Committee would move that Dr. C. B. Drake and Dr. H. L. Taylor be seated as alternates in the places of Dr. L. E. Dougherty, and Dr. E. W. Buckley.

The motion is seconded and carried.

DR. R. E. FARR: May I ask if Dr. Ridgeway has been certified as a delegate? He has forgotten his credentials.

THE SECRETARY: I think he was not.

DR. FARR: I move that Dr. Ridgeway be authorized to act as delegate from Wright County.

THE PRESIDENT: He is the regularly accredited delegate?

DR. FARR: Yes, sir.

The motion for Dr. Ridgeway to act as a delegate in the absence of his credentials is seconded and carried.

DR. H. M. WORKMAN: The delegates of the Lyon-Lincoln Society is not present, Dr. H. H. Valentine, and Dr A. L. Vadheim who was elected alternate, is present, but his credentials are not here. But he phoned Dr. Vadheim to act. As secretary I know that he was selected as an alternate. I move that he be seated as a delegate.

The motion is seconded.

THE SECRETARY: May I explain why Dr. Vadheim has no credentials? There was no report of the secretary of the Lyon-Lincoln Society of any alternate being elected. Dr. Valentine was the regularly elected delegate and there was no alternate reported on the roster. That explains why they have no credentials for the alternate.

DR. H. M. WORKMAN: Well, the blank was endorsed to him and is not here.

THE PRESIDENT: Inasmuch as the Councilor from that district vouches for the credentials of this alternate, it seems as though it ought to come before the house. All in favor of seating this alternate as the regularly accredited delegate from this county, say aye, contrary, no. It is carried.

We will now have the roll call.

The roll call of delegates was thereupon read.

THE PRESIDENT: This completes the roll call. Are there any other delegates whose names have not been called? The next item of business is the election of officers. The first officer to be elected is the president of the Association. Nominations are in order.

DR. R. J. HILL: Mr. President and Gentlemen, I would like to place in nomination Dr. J. H. Adair, of Owatonna. Dr. Adair is an old and valued member of the Association, has always taken a deep interest in the proceedings of the Association and is worthy of the nomination.

DR. J. H. JAMES: Second the nomination.

THE PRESIDENT: Are there any other nominations?

DR. R. E. FARR: I move that the nominations be closed and that the secretary cast the ballot of the Association for Dr. J. H. Adair as president.

The motion is seconded and carried.

THE SECRETARY: Your secretary hereby casts the ballot for Dr. Adair of Owatonna for president of the Association for the ensuing year.

THE PRESIDENT: The president will ask Dr. Nippert and Dr. James to act as a Committee to find Dr. Adair and bring him before the House of Dele-

gates. Nominations are in order for First Vice-President.

DR. D. M. JONES: I wish to present for the office of First Vice-President the name of Dr. E. M. Clay, of Renville.

The nomination is seconded.

DR. R. J. HILL: I move that the nominations be closed and that the Secretary be instructed to cast the ballot of the House of Delegates for Dr. Clay.

The motion is seconded and carried.

THE SECRETARY: The secretary hereby casts the ballot for Dr. Clay of Renville for First Vice-President of the Association for the coming year.

THE PRESIDENT: The Second Vice-President, nominations are in order.

DR. W. L. BEEBE: I would like to nominate Dr. C. B. Lewis of St. Cloud.

The nomination is seconded.

THE PRESIDENT: Are there any other nominations?

DR. W. L. BEEBE: I move you that the secretary be empowered to cast the ballot of the Association.

The motion is seconded and carried, and the ballot is so cast by the Secretary.

The President-elect at this time came into the room and spoke as follows:

DR. J. H. ADAIR: Well, gentlemen, this is so sudden. Do I understand that I am here now in a sort of a semi-official capacity or likely to be?

THE PRESIDENT: No, not yet. I learn that you will not be President until the 1st of January.

DR. ADAIR: Well, gentlemen, I can only say that I appreciate very profoundly, as I hope you all believe, the honor you have conferred upon me, by making me the President of this Association. It is an honor of which any man can be proud, and I shall do my best, and my best is not very much. But such as it is, I promise it, to make the work of the Association for the coming year at least in line with that which has preceded it. Now, I haven't got a word to say, this has all come upon me suddenly, but I want to say that I thank you very much. (Applause.)

THE PRESIDENT: Nominations for Third Vice-President are in order.

DR. CROSS: I nominate Dr. Giffen of Rochester.

THE SECRETARY: Dr. Giffen is a delegate.

DR. CROSS: I nominate Dr. Cooney.

THE SECRETARY: He is an alternate delegate, but he is not seated.

THE PRESIDENT: He would be eligible.

THE SECRETARY: I have understood that he is here.

DR. CROSS: Dr. Cooney was not seated by the Committee on Credentials.

THE PRESIDENT: Provided he is here at the meeting.

A DELEGATE: He was here yesterday.

THE PRESIDENT: Dr. H. C. Cooney has been nominated for Third Vice-President. Do I hear any other nominations? If not, a motion is in order.

DR. CROSS: I move that the secretary be instructed to cast the ballot of the Association for Dr. Cooney for Third Vice-President.

The motion is seconded and carried.

THE SECRETARY: The secretary hereby casts the ballot for Dr. H. C. Cooney, of Princeton, Minnesota, for Third Vice-President for the ensuing year.

THE PRESIDENT: The office of Secretary; nominations are in order.

DR. J. C. LITZENBERG: I wish to place in nomination the present incumbent, Dr. E. R. Hare. I urge his nomination on account of his efficient service, and his training as an expert accountant in his youth has enabled the Association to get its records into shape so that anybody can consult them at the present time, which is certainly a feat for a Secretary in his first year.

DR. WORKMAN: I do not wish to criticize the present Secretary, but I would like to nominate a man who has served this society faithfully, who is thoroughly familiar with the duties of his office, and who lost in a tie vote. I want to nominate Dr. Thomas McDavitt of St. Paul.

DR. J. T. CHRISTISON: Ramsey County wishes to second the nomination of Dr. Hare.

DR. W. L. BEEBE: I should like to have all of you vote for Dr. McDavitt, as he has proven a successful secretary of this Association.

THE PRESIDENT: Are there any other nominations? If not, I will declare the nominations closed. The House of Delegates will prepare by ballot to elect a Secretary. I will appoint Dr. Adair and Dr. Hynes as tellers.

Ballots were cast by the members and gathered up by the tellers.

THE PRESIDENT: While the tellers are counting the ballots we will proceed to nominations for Treasurer.

DR. SAVAGE: I place in nomination the name of Dr. F. L. Beckley, the present incumbent.

THE PRESIDENT: Any other nominations?

DR. SAVAGE: I move that nominations be closed and the Secretary be instructed to cast the ballot for Dr. Beckley.

The motion was seconded and carried.

THE SECRETARY: The Secretary hereby casts the ballot for Dr. F. L. Beckley of St. Paul for Treasurer of this Association for the ensuing year.

THE PRESIDENT: Nominations for Councilor for the Second District.

A DELEGATE: Mr. President, who is the Councilor for that district now?

THE SECRETARY: J. G. Millspaugh, of Little Falls, is the present incumbent.

DR. HILL: I move the nomination of Dr. Millspaugh.

DR. BELL: I second the nomination.

THE PRESIDENT: Are there any other nominations?

DR HILL: I will include in that motion then that the Secretary be instructed to cast the ballot for Dr. Millspaugh.

The motion is seconded and carried.

THE SECRETARY: The Secretary hereby casts the ballot of the Association for Dr. J. G. Millspaugh, of Little Falls, for Councilor of the Second Distirct for a term of three years.

The PRESIDENT: Councilor for the Third District.

THE SECRETARY: W. A. Dennis, of St. Paul, is the present incumbent.

Dr. CHRISTISON: I move you that Dr. Dennis be re-elected as Councilor for the Third District.

DR. SAVAGE: I second the motion.

DR. Hill: I will move that the nominations be declared closed and that the Secretary be instructed to cast the ballot for Dr. Dennis of St. Paul.

Motion seconded and carried.

THE SECRETARY: The Secretary hereby casts the ballot for Dr. W. A. Dennis of St. Paul as Councilor of the Third District for a period of three years.

THE PRESIDENT: I will announce the result of the ballot for Secretary.

Total number of votes cast..... 35
Dr. Earle R. Hare received..... 21
Dr. Thomas McDavitt received..... 14

I therefore declare Dr. Hare elected. All of you know what a good speech he makes, so we will call on him.

THE SECRETARY: Mr. President, Mr. President-

Elect, Councilors, Delegates to the Minnesota Medical Association:

It certainly is with deep appreciation of your confidence that I a rise in this House of Delegates under present circumstances. As I have gone over the records of this Association, going back a period of 51 years, I see I am the successor of some very illustrious men. I can recall the names of Dr. Boardman, whom some of you knew, Dr. Ignatius Donnelly, and Dr. Thomas McDavitt, men who have served this Society well and long as Secretaries; and I feel that I am following in the wake of some excellent men.

I became Secretary of this Association at a critical time of its history, a time when there was dissension and lack of harmony prevailing among its members because of some personal likings and personal dislikings. I feel in your re-election that this is a vote of confidence to a neophyte entering upon the duties of an important office; and I want to say, entering upon those duties without instructions, that it has been an arduous year of service in the State Medical Association, but a year which I have enjoyed, and a privilege for which I am deeply grateful.

So as I stand before you today, re-elected to this office, I can only say that I hope with your co-operation to re-establish harmony and unanimity in the Society. Let the dove of peace rest over us, as she does today over the world, and let us with our united effort endeavor to build up a Society which shall be second to none in the United States. If you, gentlemen, as delegates of the Association and as members of the Association, will take my re-election as seriously as I do, I shall have your co-operation, and at the next year's meeting we shall be able to say that we have during the year moved forward many degrees. I thank you.

THE PRESIDENT: Nominations are now in order for Councilor for the Fifth District. Who is the present incumbent?

THE SECRETARY: Dr. H. M. Workman.

The re-election of Dr. Workman was moved and seconded.

DR. LITZENBERG: I move the nominations be closed and the secretary cast the ballot for Dr. Workman.

The motion is seconded.

THE PRESIDENT: You have heard the nomination of Dr. Workman, the very efficient Councilor from the Fifth District, and the motion also of Dr. Litzenberg that the nominations be closed and the secretary be instructed to cast the ballot of the Association for his election.

The motion is carried.

THE SECRETARY: I hereby cast the ballot for Dr. H. M. Workman of Tracy for Councilor of the Fifth District for a term of three years.

THE PRESIDENT: Councilor for the Eight District to fill out the unexpired term.

DR. H. Z. GIFFEN: Mr. President, I nominate Dr. W. F. Braasch, of Rochester.

The nomination is seconded; and upon motion of Dr. Farr, duly seconded, that the nominations be closed and the secretary cast the ballot for Dr. Braasch, the motion was carried and the ballot so cast by the secretary, to fill the unexpired term of Dr. H. F. McGaughey, of Winona, for a period of one year.

THE PRESIDENT: Members of the House of Delegates of the American Medical Association, one delegate to serve for two years. Nominations are in order.

Dr. J. W. Bell was elected as delegate of the Association to the American Medical Association for a period of two years. Dr. A. E. Spalding, of Luverne, was elected as alternate delegate to the American Medical Association for a period of two years.

THE SECRETARY: It is usual for a motion to be made by this House to authorize the incoming President to appoint the Committees called for by the Constitution and By-Laws.

DR. CROSS: I make such a motion, that the incoming President be authorized to appoint all standing and special committees under the By-Laws for the ensuing year.

DR. BELL: Second the motion.

The motion was duly carried.

Upon motion, duly seconded and carried, St. Paul was chosen as the meeting place for the 1920 convention.

THE PRESIDENT: Unfinished business.

DR. CHRISTISON: I would like to renew the motion I made the other day, which was seconded, I think, by Dr. Rowe of Duluth, and I will also ask that Dr. Hill of the Minnesota Public Health Association be accorded the privilege of the floor.

Motion is seconded and carried.

DR. HIBBERT W. HILL: Mr. President, and Gentlemen: The resolution which Dr. Christison was kind enough to present for us asks for the indorsement of the Minnesota State Medical Association, first, of the volunteer public health work, which has been done all over this state for quite a number of years now, by the Minnesota Public Health Association, and, second, for the indorsement of the method of financing, which is by the sale of the Red Cross Christmas seals.

That seal is the property of the American Red Cross and has been for many years. For a number of years it has been given over to the National Tuberculosis Association for the purpose of financing the anti-tuberculosis campaign of the country. The Minnesota Public Health Association is one of fifty associations in these United States, of which I am the president, by the way, elected at Atlantic City when I was not there and didn't know anything about it. Those fifty associations are similarly financed all over the country by the sale of the Red Cross Christmas seal, which is the property of the American Red Cross, however.

Last year they took the seal off the market, did not permit the sale, but endowed us, we who would have had the sale privileges, with approximately $100,000,—in our case,— in each state. The amount given was the amount equivalent to the sale of the previous year; so that last year we had no seals.

Now, however, we are going back at it again, and going at it very strong. In 1918, we expected we would have sold $150,000 worth. This year we are going after a quarter of a million and we expect to make it. Of course, in order to get the publicity across, we ask for the indorsement of those who carry weight with the public. We have, for instance, the indorsement of the Federation of Women's Clubs, the State Federation of Labor, the American Legion, and so on, and we certainly want your indorsement.

If I have not covered the ground sufficiently, I should be very glad to answer any questions that anybody would care to put about it. In the resolutions were mentioned a number of those bodies with which we have very strong co-operation, the American Red Cross, the Northwest Pediatric Society, which has done good service throughout the state, the State Dental Society, the State Board of Control, the Pediatric Department of the University of Minnesota and the Advisory Commission on Tuberculosis. We have made arrangements with the State Board of Control in the line of clinics.

We had a lady speaker who told us about what a wonderful thing they are beginning to get into New York City. When we told her we had made arrange-

ments to put them into our organization, she admitted that Minnesota was, as usual, away ahead of the rest of the country.

On the Modern Health Crusade, out of 110 prizes that were awarded throughout the whole United States, Minnesota got 51. We had a quarter of a million children engaged in that crusade despite the "flu" and the other things we encountered. We have 82 county organizations out of a possible 86 and those county associations are doing good work right in their own counties. It is as democratic an association as it can be made. Our Association was incorporated last fall and among the incorporators are the Governor, the President of the State University, and a number of others. Your present President is one of the incorporators also.

We expect through that organization to reach, not just the high-brows,—that is the trouble with public health work, not just the cities, not where the people have the advantages, but the ultimate farmer out in the most isolated districts of the most isolated parts of the state. In fact, in Lake county and Cook county, they have public health societies and our representative has to take a boat to get there and our organization there is as complete as any other organization.

THE PRESIDENT: I think, Dr. Hill, the members would like to hear something about how this fund is to be expended.

DR. HILL: In regard to the fund, you mean the mechanism of the fund or the objects?

THE PRESIDENT: The objects.

DR HILL: We have arranged with the American Red Cross, they are supplying public health nursing service through this state and through the four states of the northern division of the American Red Cross. We used to handle the proposition; I think we put into the field the first demonstration public health nurse outside of the cities in this state. That occurred during my first year of service. I was on a leave of absence from my army service. In the interval the work had grown enormously. We had demonstration nurses in every county during that time in the state. We are placing permanent nurses, and have a Nurse Registry.

When the American Red Cross, however, undertook that proposition, not for Minnesota alone, but for the whole United States, with very much larger finances than we had, we were glad to agree with them that was not our field, and they were glad to agree with us that our field was education, demonstration and legislation. We are carrying out our education through demonstration, but after all, the best way of teaching is by making people do it themselves. There are three stages; first, telling people, then showing them, then making them do it themselves.

We have got to the third stage in Minnesota. We are inducing the people to do their own public health work through their own organizations in the field and not making it a matter of pushing it down from above. We are having them develop it in their own county organizations. Those county health societies are constituent members. We have our county officers and directors, one to three from every township, and no county organization is recognized until they have directors from the townships in the county. Funds are expended through those organizations, through the county. Since we gave up our public health nursing the children's clinics have been continued by the Northwest Pediatric Society. The State Dental Society also supplies these clinics, and the State Board of Control I have mentioned. Our present purpose is to see to it that every person in the state will enjoy the same advantages as the city people.

Those clinics are invariably matters of examination and advice, but in every case the patient is referred to his family physician for treatment. Whenever a clinic is to be held in charge of one of these societies, notice goes to the local physician or dentist, as the case may be, and he is notified to attend the clinic to show his co-operation in the system; and in every way the point that supervision and treatment must be continued in the hands of the local physician is emphasized and carried out through the literature.

We have only had one complaint out of the numerous clinics that have been held throughout the state of any one overstepping those bounds, and the matter was taken up very, very promptly and I am perfectly certain it will not occur again.

THE PRESIDENT: Are there any questions that any of the delegates would like to ask Dr. Hill before he takes his seat? We thank you very much, Dr. Hill, for coming before us. Do you wish to take up this resolution now and act upon it which was before the House on Wednesday?

A DELEGATE: May we have it read, please?

THE PRESIDENT: Will the Secretary please read the resolution as it was presented at that time?

(Dr. Christison resolution was read by the Secretary.)

THE PRESIDENT: You have heard the resolution; what do you wish to do with it?

Upon motion duly made, seconded and carried the resolution was adopted.

DR. HIBBERT W. HILL: May I thank the House of Delegates for their action?

THE PRESIDENT: Now, Dr. James.

DR. J. H. JAMES: I regret that I was chosen to present this matter. There are others in our society who can talk better than I can and present the matter in a more emphatic way. Our society probably stands in the same relation as any other county society in the state. From the time of the inception of this protective matter, which was adopted by the state society, members of our society have objected, and I think at each session before the meeting of the state society the delegate has been instructed to protest against it.

Our society is composed of about three-fourths of the physicians in the county. There are certain members of that society that have stated positively that, while they wanted to belong to the county society and were willing to contribute to it their dues, they were opposed to this assessment or tax for the support of the protection in the state society which they did not want; that they were obliged to get protection from the outside, and if they had any trouble they would not call upon them for assistance. We have labored with them to prevent them from withdrawing from the society on that account, hoping that sooner or later this matter would be adjusted to their satisfaction. In addition to that we have a number of doctors in our county who are not members of our society, have never been, and probably never will be so long as that exists.

Now, there is another feature that strikes me. This protection is based upon the same principles that assessment insurance companies are. We have an illustration already of an increase in the assessment for this purpose, and that is going to continue until in the future it will be a burden. We are going to lose membership, and we are not going to increase our county membership.

Gentlemen, that is all I have to say, except my own personal opinion of the matter is that personally I don't care. I am speaking for the county society.

DR. R. J. HILL: Do you introduce any resolution?

THE PRESIDENT: There is a resolution that on your motion was put over. We will hear the motion.

(Dr. James's resolution was read.)

DR. HILL: That doesn't get anywhere, it is simply a protest against it. There is no motion as to what we will do about it.

THE PRESIDENT: Do you wish to make any motion in reference to the matter, Dr. James?

DR. JAMES: I move that the state society abolish that protection feature.

Motion is seconded.

THE PRESIDENT: You have heard the motion; are there any remarks?

DR. HILL: That motion should be put a little different. We already, according to the report of the Secretary, have several cases on hand. I should think it would be better to say when the cases now in litigation are disposed of that the defense feature of the Association be abolished, or something of that kind.

DR. JAMES: I accept that.

The seconder of the motion also accepted the modification.

DR. FARR: It just happens I was on the committee that was given in charge of this when it was inaugurated. I was against the proposition on the ground that Dr. James mentioned. I have always been against it because every doctor of this Association must carry insurance in order to protect himself, or other insurance in order to protect himself in case a verdict is found against him. It seems to me that the amount of money we are spending for this purpose is more or less wasted. Every man should carry insurance that will protect him in case of a verdict, and I therefore heartily support the motion.

THE SECRETARY: May I say a word, in order that we may understand ourselves in the position we are now taking. It seems to me that the motion as offered does not cover what Dr. James wants to do. It ought to be stated that the State Association from this time forward cease to offer protection against malpractice for its members and that will cover it in a way Dr. Hill suggested, because we are in duty bound to take care of the cases that are already filed, but from now on that it be the sense of the Association to cease protection, and the membership be so notified.

DR. LITZENBERG: I would like to ask for information. Inasmuch as we have been conducting this defense feature, would there not be a legal obligation upon the society to defend any suit for alleged malpractice occurring up to this date, whether suit is instituted or not? This possibility would have to be kept in mind. I think this assessment is in the nature of a contract with the members.

DR. FARR: In order to have this perfectly regular, wouldn't it be best for the Secretary to write out in his beautiful language that "dove of peace" language of his, exactly what we want that will cover the point. I rise as an advocate of peace.

THE PRESIDENT: Will the Secretary write out the motion?

DR. HILL: While that is being done, this question has come up ever since we had this defense proposition. Men of the city have almost uniformly been opposed to it. I suppose there isn't a man, certainly not in the cities, that does not carry insurance. They have not regarded this defense as of any special value. I do not know how many take advantage of it, but the question has always come up and it has always been stated that we were carrying this for the benefit of the country members that did not have other insurance; that it was not particularly for the bulk of the physicians but that there were a great many men who did not carry insurance at all.

I have always been opposed to the inauguration of this scheme because it is only a question of time, as it is with all assessment companies, when we are going to be swamped. We have gotten along marvelously well up to the present time, but inevitably the time will come when the assessments will have to be raised. I understand in California they are $12 to $15. They have had it a good deal longer than we have, and they find it a constantly increasing demand and call for more money.

We almost all of us have insurance in other companies; what is the use of keeping this up? As I say, it is inevitable that it will swamp us, as Dr. James says. We do not offer to pay any judgment that is rendered against a man, we could not do it. One judgment would overwhelm us. So I am in favor, just as soon as we can and in any way that is legal, of abolishing the whole scheme.

THE SECRETARY: Mr. President, I rise to a point of order. The defense feature of the State Association is covered by a by-law and in order to get at it, it will be necessary for some member of the House of Delegates to move that we proceed to the rescinding or modification of that by-law.

DR. HILL: It will have to lie over another year.

THE PRESIDENT: That is as the Chair understands it, yes. If Dr. James wishes to give notice at this time of a rescinding of certain parts of the Medical Defense chapter, as established in the by-laws of the Association, he can make a motion to that effect at this time, but it must lie over until the next session, and it must be in writing. Dr. James, do you wish to prepare that now and present it?

DR. JAMES: I think so.

A DELEGATE: I rise for information. Does this motion require action by the component societies?

THE PRESIDENT: The Chair will refer that to the Secretary.

THE SECRETARY: Reading:

"These by-laws can be amended at any session by the majority vote of all of the delegates present at that session after the amendment has lain on the table for one day."

DR. HILL: I thought it was one year.

THE SECRETARY: It says one day but in this case it will have to be a year.

THE PRESIDENT: What other unfinished business, Mr. Secretary, is there before the Association?

THE SECRETARY: That is all of the unfinished business except the introduction of this resolution.

THE PRESIDENT: I will now call for new business. Dr. Bell, you have a matter to present?

DR. J. W. BELL: Mr. President, Members of the House: At the meeting of the American Medical the most acute question before us, aside from social insurance, was the question of narcotics. We are in a peculiar dilemma with reference to the use of narcotics in this country. Our laws are conflicting and the situation, as we all know, is bad. For instance, in the City of New York, in one small drugstore, 64,000 prescriptions of narcotics were written in a period of one year, by three physicians, and yet under the law they were protected. There you see one weak side of the system.

In our own state the situation of late, I think, has appealed to members of the legislature, and in their efforts to correct the situation they have passed some peculiar legislation. For instance, I want to read you the last, this was passed the last session:

"Be it Enacted by the Legislature of the State of Minnesota:

"Section 1. Certain narcotics prohibited. That Section 2, Chapter 260 of Laws 1915, be amended so as to read as follows:

"Section 2. It shall be unlawful for any physician, surgeon or dentist to furnish to, or prescribe for, the use of any habitual user of the same any of the substances enumerated in Section 1, Chapter 260,

Laws 1915, unless such physician, surgeon or dentist can show that it is necessary to furnish or prescribe the same to such user in order to save his life."

That is a peculiar situation and liable to give us trouble. For that reason I move, Mr. President, that a committee of three be appointed to take up this matter and consider it, both in an economical and medical way, and report at the next annual session.

DR. HILL: I second the motion.

The motion was thereupon put to a vote and carried.

THE PRESIDENT: The Chair will rule that the sense of any motion calling for the appointment of committees is that the appointment is to be made by the incoming president. Dr. Hare, what other business is there?

THE SECRETARY: I hold in my hand correspondence from our attorneys and from one of our members, Dr. Meyerding, of Springfield, Minnesota, and from some attorneys at New Ulm, Messrs. Somsen, Dempsey & Mueller, relative to the payment of a bill in this defense matter; and in order that there be no misunderstanding among the members should you hear this matter talked of, I think it is only fair that the gist of this correspondence be placed before you.

Dr. Meyerding writes requesting that a bill for some $99.00 be taken care of by the State Association. This, of course, is proper, providing the services rendered by these attorneys were rendered to the State Association or at the instance of the attorneys of the State Association. But in taking up this matter I find that these services were rendered to Dr. Meyerding by the attorneys, not at the instance of the State Association nor at the instance of the attorneys of the State Association but purely in a private way. Consequently the bill runs to Dr. Meyerding and not to the State Association.

I simply mention this in order that any criticism which you, as delegates, may hear, may be properly taken care of. I think it is a matter which rightfully comes to the notice of the House of Delegates.

The second matter is this: At the morning session of the Section on Medicine of the Minnesota State Medical Society, pursuant to a suggestion from Dr. H. P. Ritchie, Chairman Tuohy asked for a motion in regard to the appointment of Secretaries for the sections. Dr. Andrews, Mankato, moved that the House of Delegates appoint secretaries for a period of not less than two years, since their function was so largely the making up of programs and a longer term of office increased their efficiency. This motion was seconded and carried.

After some discussion the Secretary read Section 2 of Chapter 8 of the by-laws, and it was the consensus of opinion that no action upon this motion could be taken by the House of Delegates. The Secretary announced that he would prepare a resolution along the lines suggested by Dr. James as to the amendment of the by-laws and have it entered in the minutes.

DR. LITZENBERG: I move that the Secretary be so authorized. I would like to suggest that there be incorporated in that the legal point I mentioned. In other words, at present our responsibility runs for six years. In order to protect the society that resolution can not go into effect for six years. We must protect the society legally. A malpractice suit could be brought within the next six years after the date of the adoption of this resolution.

I think this matter should be looked into through the attorneys of the Association to see whether that is necessary or not.

DR. HILL: I will include in that motion that the Secretary also be instructed to draw a proper resolution for the change of the by-laws in regard to the appointment of secretaries.

THE SECRETARY: I want to understand the situation definitely. My understanding of Dr. James's position is simply that we amend the by-laws to cut off the defense feature at this time, or at the time of its passage. That in no way will interfere, from a legal standpoint, with our responsibility to our members for any malpractice suit which might be instituted within the legal period, up to the time of the change of the constitution. That has been definitely determined in another case. If I carry insurance for one year, then the company that insures me is legally bound for the period, as I understand it, covered by law for filing malpractice suits; for six years, in other words. I am sure that is true, so I do not believe it will be necessary to cover that point by a resolution. That point is established by law.

DR. LITZENBERG: The point I am making is this: if that is true then we must have a fund to protect the Association to defend those.

THE SECRETARY: I understand that.

DR. LITZENGERG: And the assessment would have to be continued unless there were enough funds in the treasury in this particular fund to cover that. The assessment would have to be continued for six years to protect the society.

DR. FARR: If we do not change our dues at this time, will that not automatically take care of itself? We reduce the fees later when we find it is safe to do so.

THE PRESIDENT: As the Chairman understands it, we are making a start only, and it would require a little time to work this mechanism out. Therefore, inasmuch as we are not going to act upon it definitely but are only empowering the secretary to prepare a resolution to be presented at the next meeting, it strikes me we better give him large powers and let him go ahead and draft this as he thinks wise.

DR. JAMES: This thought occurs to me, that our dues to the State Association depend upon what we need to meet expenses, that those two dollars are not really a special assessment but are a part of our dues to the state society. We can make our dues six dollars or ten dollars, whatever we want to, to meet the expenses. We don't have to make a special assessment for this feature but have the dues sufficient to cover the anticipated expenses of the Association.

THE PRESIDENT: The motion is before you, I think it is fairly clear as to the object of it. All in favor say aye; contrary, no. It is a vote, and the Secretary is authorized to prepare this to be presented at the next meeting of the Association. What further new business is there?

DR. LITZENBERG: The question has been mentioned as to the reduction of the time for the institution of malpractice suits. Every state in the union except Minnesota has a two year limit. It seems to me that the physicians of Minnesota should not be subjected to an additional burden of four years. I therefore move that our Legislative Committee be instructed to have a bill presented before the legislature for the reduction of the time to two years.

THE PRESIDENT: I think that has already been taken care of; in fact, I am quite sure.

THE SECRETARY: It has. May I say a word? At the instance of the committee I had a bill introduced in the legislature, as I suggested at the last session. It went into a committee of lawyers and they promptly killed it and never allowed a hearing. Some of my lawyer friends tell me it was personal, that is, they felt they would be deprived of some of their rights in instituting suits for malpractice should that time limit be reduced. It seems to me now, inasmuch as the secretary has been instructed to rein-

troduce this bill, and it will be introduced if not the first then the second week of the legislature and will be promptly taken up, that in the meantime the delegates of this society should do a little work among some of their friends in the legislature with reference to this particular thing. In other words, begin now a campaign of education among the legislators in order that they may have heard of this thing before it comes to their attention in the legislature one year hence.

DR. G. G. WEISER: I believe Dr. Andrews has a matter he desires to bring before the House of Delegates. As he is not a delegate I move you that he be given the privilege of the floor.

The motion is seconded and carried.

DR. J. W. ANDREWS: I have a communication here from Dr. E. J. Davis, a charter member of the Minnesota State Medical Association, a man whom many of you remember and used to know very well. It is a very brief history of the Association, and with your permission I will read it.

"Ontario, Calif., Sept. 22, 1919.

"To the Members of the Minnesota State Medical Society, Greetings:

"While in a reminiscent mood and brushing away some of the ancient cobwebs from memory, I was reminded of the fact that last February the Minnesota State Medical Society passed its fiftieth anniversary. Fifty years is a long span in the life of an organization constituted as your society, especially so because the state was then comparatively young and sparsely settled. As you celebrate the semi-centennial of its birth it may be of interest to its present members to know somewhat of its parentage.

"A call was issued, by whom I do not remember, for the physicians in the state to meet in the National Hotel, St. Paul, February, 1869, for the purpose of organizing a medical society. The following physicians complied with the request, thereby constituting its charter members: St. Paul:—Samuel Willey, D. W. Hand, J. W. Murphy, Wharton, Stewart; Minneapolis:—Hill, father of Dr. Hill, who served efficiently as your treasurer for many years, Lindley, Ames, and son A. A. Ames. The Ames got miffed at something and withdrew from the meeting, their withdrawal evidently proved for the good of the cause. Stillwater:—Alexander Stone; Hastings:—Adams, Finch; Red Wing:—C. N. Hewitt, Sweeney; Winona:—Franklin Staples, Stuart; Rochester:—W. W. Mayo, father of Will and Charles Mayo; Pine Island:—Hill; Zumbrota:—Taft; Owatonna:—Blood; St. Cloud:—Senkler, father of Dr. Senkler of St. Paul; Le Sueur:—Otis Ayer; St. Peter:—A. W. Daniels; New Ulm:—Mueller; Mankato:—E. J. Davis. It is quite probable that there are errors of omission in this list, as I have no record of the meeting and am writing entirely from memory. My thinking cap then was in a more plastic state, hence more susceptible to lasting impressions than it is now that I am nearing my eightieth milestone.

"We organized by electing Samuel Willey, president, Franklin Staples first vice-president, and the writer secretary. I don't recall the names of the balance of the officers. Many of those men served in the army as surgeons during the civil war. The hardships and privations they endured there enabled them the better to withstand the trials and privations they encountered in their practice, especially in rural districts.

"It was my good fortune to have been brought into intimate contact with many of them for many years and was thereby able to form an accurate estimate of the many excellent qualities they possessed of head and heart. They were men of high ideals, devoted to their profession and of the strictest professional honor.

"I esteem it a privilege and a pleasure to commend the worthy sons of those noble sires and others for the faithful and efficient service they have rendered to the society, thereby developing it to the high plane it now occupies.

"Dr. Daniels, now of Pomona, California, is the only surviving charter member that I can recall, possibly there are others. Pomona is but six miles distant from Ontario, hence convenient for us to hold reunions and recount scenes and events in the early days in the Minnesota Valley. The doctor passed his ninetieth birthday last December. He appears to me like an unshaken, sturdy oak, notwithstanding the fact that he weathered many a severe winter's blast in responding to the calls of his patients for over fifty years.

"St. Paul in its customary, generous habit, gave those who remained in the city over night a warm reception. About six o'clock the following morning, after attending the convention, I was wakened suddenly by a loud rap at my door with the announcement that the hotel was on fire. I dressed quickly, hastened to the office to look up Dr. Ayer's name on the register, called a porter's attention to it, telling him that the doctor was quite deaf and to kick the door of his room open if necessary to waken him. I made my exit and waited anxiously for his appearance. He came presently, partly attired, completing his toilet on the sidewalk with the temperature twenty degrees below zero. He claimed to have had a close call and vowed that he would never again stay in a tavern over night; and he didn't.

"Yours sincerely,
E. J. Davis."

DR. ANDREWS: Mr. President, I believe I have no right to make a motion, have I?

THE PRESIDENT: No.

DR. ANDREWS: I hope that some one will move, first, that this communication be accepted and made a part of the minutes of this meeting and, second, I hope that some one will move to make Dr. E. J. Davis an honorary member of this society. Many of you remember him; you know he was a very worthy member and is a very worthy man.

DR. WORKMAN: I move that this communication be placed on the records and published in the proceedings of the society. I question whether we can have honorary members in this society. There may be some provision in the by-laws saying it can not be done.

DR. HILL: I second the motion.

The motion was duly carried.

THE PRESIDENT: The Secretary will read the provision that covers this point with reference to honorary members.

THE SECRETARY: (Reading Section 1, Chap. 1 of the by-laws.) There is nothing said about honorary members that I see.

DR. WORKMAN: Then I move that Dr. E. J. Davis and Dr. A. W. Daniels be made honorary members of this Association and that the Secretary notify them of this action.

The motion was seconded.

THE PRESIDENT: It has been moved and seconded that Drs. E. J. Davis and A. W. Daniels, charter members of the Minnesota State Medical Association, be made honorary members for life of this society, and that the Secretary shall so notify them. All in favor say aye; contrary, no. It is so ordered.

DR. ANDREWS: I want to thank the House of Delegates for this action.

Pursuant to instructions from the House of Delegates, the Secretary moves, first, that Chapter 11 of the by-laws relating to medical defense be stricken out, second, that Chapter 12 of the by-laws, entitled "Amendments," be renumbered 11.

Pursuant to instructions, the Secretary further moves that Chapter 8 of the by-laws, Section 2 be amended at the seventh line to read as follows, "The House of Delegates shall elect a Chairman and a Secretary for each section. The Chairman shall be elected for a period of one year; the Secretary shall be elected for a period of two years."

THE PRESIDENT: Is there any other business?

THE SECRETARY: None other, that I know of.

THE PRESIDENT: The President wants to thank all of you for your kindness and courtesy and I also want to express to you my gratitude for the honor you have conferred upon me. I now declare the meeting adjourned.

—Earle R. Hare,
Secretary.

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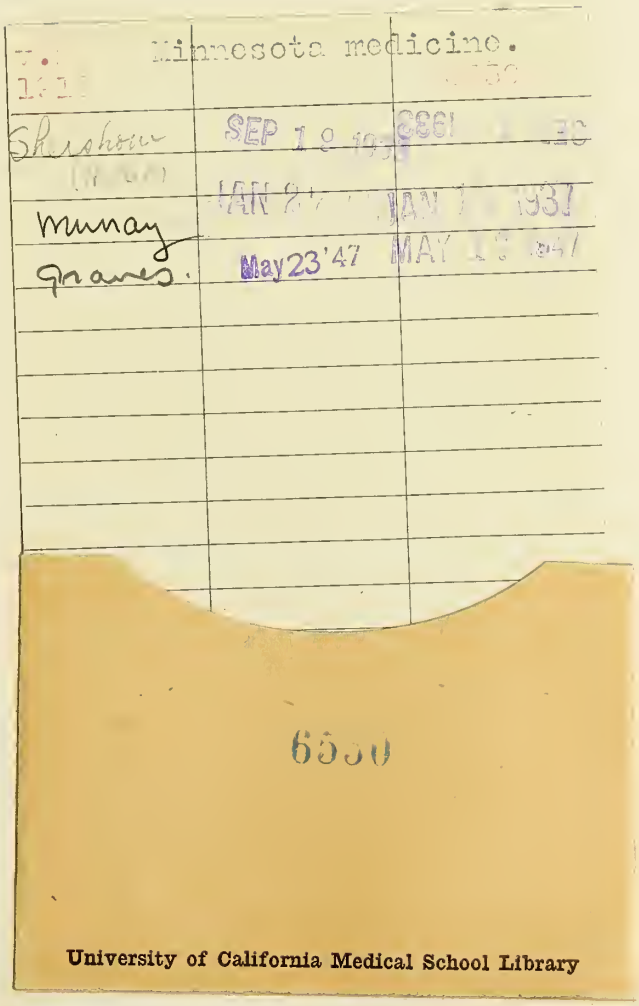
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